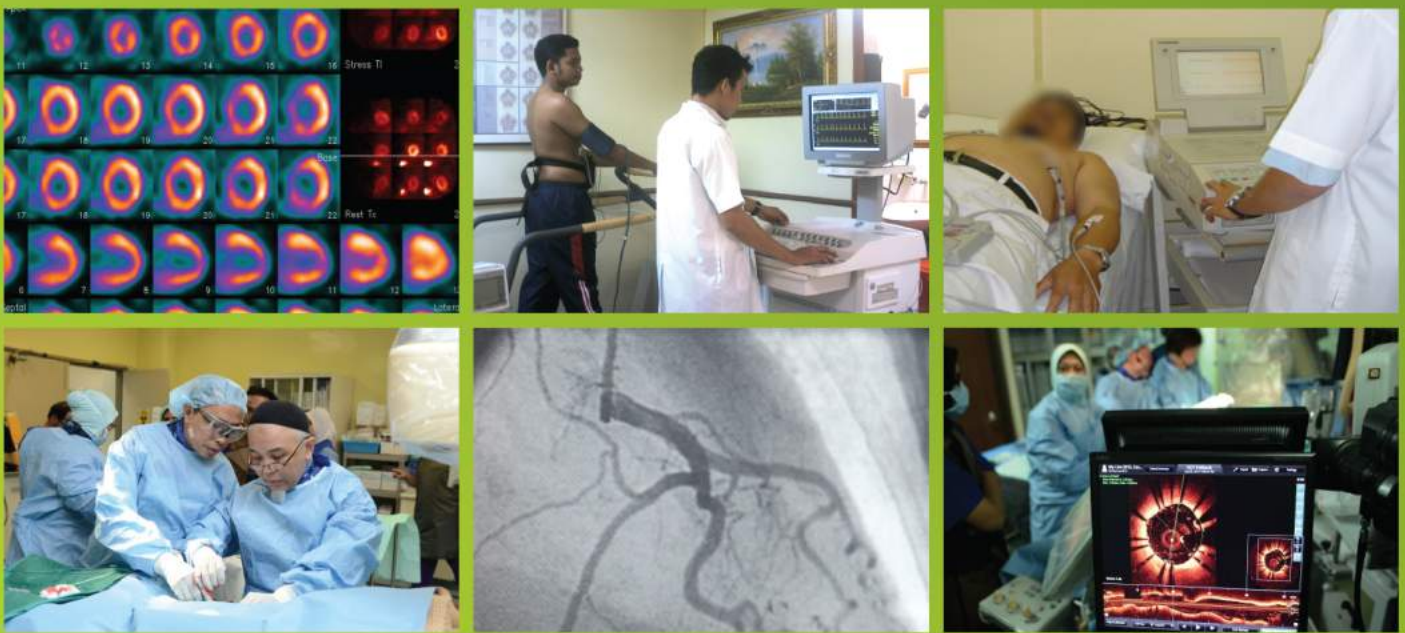# ANNUAL REPORT OF THE NCVD-ACS REGISTRY 2011-2013

EDITORS:
WAN AZMAN WAN AHMAD
SIM KUI-HIAN

CRC
MINISTRY OF HEALTH MALAYSIA
Research that matters to patients

NATIONAL CARDIOVASCULAR DISEASE DATABASE (NCVD)

Annual Report of the Acute Coronary Syndrome (ACS) Registry

2011-2013

Editors:

Wan Azman Wan Ahmad
Sim Kui-Hian

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ACKNOWLEDGEMENTS

The National Cardiovascular Disease Database (NCVD) – Acute Coronary Syndrome (ACS) Registry would like to extend its grateful appreciation to everyone who helped make this report possible.

We would especially like to thank the following:

- National Heart Association of Malaysia (NHAM)
- Health Informatics Centre, Ministry of Health Malaysia
- Clinical Research Centre (CRC), Ministry of Health Malaysia
- The members of various expert panels
- Our source data providers

PREFACE

This is the 4th report of the National Cardiovascular Disease – Acute Coronary Syndrome Registry (NCVD-ACS). The previous reports of 2006, 2007-2008, 2009-2010 have given us valuable insight to the nature and impact of acute coronary syndrome (ACS) in Malaysia. Importantly, this report marks the 10th year after the inception of the NCVD-ACS Registry, a registry which is now one of the most important resources of information for ACS in the country, and indeed for the region.

This report was made possible primarily due to the many source data providers (SDPs), who have voluntarily contributed valuable information into our secured electronic database. The evolution in diagnostics and therapeutic strategies in the management of ACS has resulted in improvement in clinical outcomes, and this is reflected in consecutive NCVD-ACS Registry reports. For example, the utility of more sensitive cardiac biomarkers to an early invasive strategy, have driven favourable outcomes of patients with ACS. The information obtained from SDPs across the country have not only provided a snapshot of ACS in Malaysia, but more significantly, uninterrupted annual data since 2006.

We would like to acknowledge the contribution of our peers and colleagues in both the Governance Board of the NCVD and also the Steering Committee of the NCVD-ACS Registry. However, we would like to commend the efforts of the NCVD Medical Writing Committee of this report, led by Prof Dr Wan Azman Wan Ahmad, who has put in over a decade of work into all the reports of the NCVD-ACS Registry published to date. His leadership and tireless efforts can be reflected in this excellent report which you have today.

We would like to thank the Ministry of Health Malaysia for the initial financial grant for the NCVD Registries and National Heart Association of Malaysia together with the Clinical Research Centre Network and Health Informatics Centre, MOH Malaysia for the yearly NCVD Registries financial supports which enabled the NCVD-ACS Registry to sustain for the last 10 years.

Finally, it is our genuine hope that this report will encourage even greater participation of centres in Malaysia into this registry. This registry should spur more outcome-based research and provide direction so that more basic research can be undertaken. Not only should this registry generate better data to further improve healthcare delivery and patient outcomes locally, but also contribute towards the global scientific pool of knowledge in ACS.

Thank you.

YB Senator Datuk Dr Sim Kui-Hian
Chairman
NCVD Governance Board

Tan Sri Dato' Seri Dr Robaayah Zambahari
Co-chairman
NCVD Governance Board

FOREWORD

It is with genuine pride and enthusiasm that we compile and present this, the 4th report of the National Cardiovascular Disease Database – Acute Coronary Syndrome (NCVD-ACS) Registry year 2011 to 2013 for Malaysians in general, and healthcare providers in particular. It is a culmination of sustained dedication and commitment of many people whom we are proud to acknowledge on behalf of the National Heart Association of Malaysia (NHAM).

Over the years, the number of hospitals involved in the registry has steadily increased and we now have 22 hospitals involved. We are also in the process of involving private hospitals in the registry.

Since we started in 2006, we have managed to collect important data from 31,635 patients in the management of Acute Coronary Syndrome (ACS). From our registry, we know that the disease trend is alarming, involving younger patients with multiple co-morbidities. This has enabled us to get a clearer picture of the profile of patients presenting with ACS in our country. With this information we can better plan for improvements in treating this number one killer in our country.

The Ministry of Health Malaysia and the NHAM have been providing support and funding for this to continue.

We would also like to take this opportunity to thank the editors Prof Dr Wan Azman Wan Ahmad and YB Senator Datuk Dr Sim Kui-Hian together with the writing committee for their tireless efforts over the weekends to prepare this report. On behalf of the NCVD-ACS committee, we would also like to extend our sincere thanks to those who have worked hard in maintaining this registry, in particular the staff in the various hospitals and the Ministry of Health Malaysia.

Finally once again, on behalf of the NHAM, thank you and keep up the good work. We encourage the health providers to use this information effectively to combat this nationwide problem.

Thank you.

Dato' Sri Dr Azhari Rosman
Chairman
NCVD-ACS Registry

Datuk Dr Jeyaindran Tan Sri Sinnadurai
Co-Chairman
NCVD-ACS Registry

NOTE FROM THE WRITING COMMITTEE CHAIRMAN

The NCVD-ACS registry was established in 2006 and so far, three reports have been published. In the previous report, 16,872 patients from 17 source data providers (SDPs) were analysed. In the current report, 14,763 ACS patients admitted from 2011 to 2013 in 19 SDPs were analysed. Over the last 8 years, the NCVD-ACS has reported 31,635 ACS patients, making it the biggest database for ACS in Malaysia.

An overview of the five chapters of this report:

Cardiac services: As of 25th January 2015, 219 cardiologists were registered in the National Specialist Register. Thus, the density of cardiologist in Malaysia is now 0.073 per 10,000 population. Of 219 cardiologists, only 35 were in the public sector, therefore, the ratio of public: private was 1:5. In 2014, there were overall 69 cardiac catheterisation laboratories in Malaysia of which, more than three-quarters were in the private sector. The distribution of cardiologists and cardiac catheterisation in Malaysia was uneven, which reflects more in the West Coast compared to the East Coast and Sabah.

Patient characteristics: The mean age of the Malaysian ACS patients, particularly the STEMI subgroup patients was 58.5 years. About one-quarter of patients presenting with ACS were below the age of 50 years. ACS events seem to have differences among the genders (79% men vs. 21% female) as well as ethnic groups. Malaysian patients with ACS have high prevalence of CV risk factors. 47% of the ACS patients have 3 or more risk factors. Thus, in the management of ACS patients, on top of treating the index event it is also important to address all the risk factors.

Clinical Presentations and Investigations: The spectrums of ACS presentations in year 2011-2013 were almost similar compared to the registry in the year 2006-2010. Almost 70% of the STEMI and 41.4% of the STEMI/UA cohort were in the intermediate to high TIMI risk score group. There was an increasing trend observed in STEMI patients presenting with Killip IV compared with the past registry (13.4% vs. 6%).

Treatment: Following STEMI, 75% received fibrinolytic therapy and 9.4% were treated with Primary PCI. The median DTN was 45 minutes, only 39.2 % achieved the recommended DTN of 30 minutes. The median DTB was 111 minutes, and only 38.0% achieved the recommended DTB time of 90 minutes. There was improvement in prescription of aspirin and statins (both more than 90%) compared to the previous cohort (2006-2010). However, the usage of beta blockers and ACE inhibitors remain the same.

Outcome: There was improvement in overall 30-day outcome compared to the last NCVD-ACS Registry in 2006-2010. This was probably attributed to more patients receiving cardiac catheterisation and angioplasty during index admission. For STEMI, patients who received fibrinolytic therapy had better outcome than those who did not. Patients who underwent urgent cardiac catheterisation and urgent PCI had better outcome than those who did not.

The report provides information of our current medical practices. It provides tremendous opportunities for further improvement and direction for future planning. More STEMI patients are expected to receive Primary PCI-via STEMI network initiative. It is important to develop clinical pathway to shorten door to balloon time and door to needle time. Secondary prevention programme, cardiac rehabilitation and guideline treatment are important.

Last but not least, I would like to thank everyone for the endless effort, admirable determination in contributing these data and the publication of this report. These efforts and contributions would definitely bring a great impact on the future management of cardiovascular disease in this nation.

Prof Dr Wan Azman Wan Ahmad
Chairman
NCVD Writing Committee

ABBREVIATIONS

ACE	Angiotensin Converting Enzyme
ACS	Acute Coronary Syndrome
BMI	Body Mass Index
CABG	Coronary Artery Bypass Graft
CAD	Coronary Artery Disease
CCU	Coronary Care Unit
CK	Creatinine Kinase
CK-MB	Creatinine Kinase, Muscle and Brain
CRC	Clinical Research Centre
CRF	Case Report Form
CVD	Cardiovascular Disease
DBMS	Database Management System
EDC	Electronic Data Capture
GP	Glycoprotein
HDL	High Density Lipoprotein
HDU	High Dependency Unit
HIC	Health Informatics Centre
ICT	Information and Communication Technology
ICU	Intensive Care Unit
IJN	Institut Jantung Negara
IT/IS	Information Technology and Information System
JPN	Jabatan Pendaftaran Negara
LDL	Low Density Lipoprotein
LVEF	Left Ventricular Ejection Fraction
MOH	Ministry of Health
NCVD	National Cardiovascular Disease Database
NHAM	National Heart Association of Malaysia
NSTEMI	Non ST- Elevation Myocardial Infarction
PMP	Per Million Population
RCC	Registry Coordinating Centre
SAP	Statistical Analysis Plan
SD	Standard Deviation
SDP	Source Data Provider
STEMI	ST– Elevation Myocardial Infarction
TIMI	Thrombolysis In Myocardial Infarction
TnI	Troponin I
TnT	Troponin T
UA	Unstable Angina

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CHAPTER 1: PROVISION OF CORONARY CARE SERVICES IN MALAYSIA

Omar Ismail[1], Abdul Kahar Abdul Ghapar[2]
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Summary

1. The number and density of registered cardiologists in the National Specialist Registry, Malaysia has increased slightly from 186 (6 pmp) to 219 (7.3 pmp) as compared to the previous reports.

2. There was still an uneven distribution of cardiologists and cardiac catheterisation laboratories in Malaysia; which were more in the West Coast of Peninsula Malaysia especially in the Klang Valley, Pulau Pinang and Melaka as compared to the East Coast and Sabah.

Coronary care services had been largely managed by the Medical Department until early mid-80's when the Cardiology Department at Hospital Kuala Lumpur, University Hospital and private hospitals, mainly in Klang Valley were established. The contribution of cardiologists in this vital care has improved significantly after the corporatisation of Institut Jantung Negara in the early 90's and the expansion of cardiology services in the MOH hospitals all over the country as well as private specialist hospitals in the recent years. Despite this progress, the rate of reported primary PCI for STEMI was still low (<10%). Most of the STEMI patients were admitted to MOH hospitals and majority were treated with thrombolytic agents (70%).

Concomitantly, for the last 3 years, there was an increase in the rate of PCI for STEMI patients using pharmaco-invasive strategy, where patients were initially managed medically and then referred for PCI during the same admission. This had resulted in a significant reduction in both in-hospital and 30-days mortality as described in the subsequent chapters in this report. Hence, the MOH has recently reduced the target of KPI for both STEMI (mortality from <15% to <10%) and NSTEMI (mortality from <10% to <7%) for all its hospitals.

Number and density of Cardiologists in Malaysia

As compared to the previous report, there was a small increase in the ratio of cardiologists per million population (pmp) from 6 to 7.3 pmp, predominantly in the Klang Valley, Pulau Pinang and Melaka and also in other regions i.e. Perak, Kedah, Johor and Sarawak. In 2014, there were a total of 219 cardiologists registered with NSR in Malaysia (184 private and 35 in public). In comparison, there were 57 cardiologists pmp in USA[1], 23 pmp in Singapore[2] and 18 pmp in United Kingdom[3]. The highest density was in Wilayah Persekutuan Kuala Lumpur (WPKL) (41.8 pmp) followed by Pulau Pinang (20 pmp) and Melaka (9.4 pmp). These figures were slightly higher than the previous report. On the contrary, the lowest density was in Perlis (0) followed by Sabah (1.6 pmp), Kelantan and Terengganu (1.7 pmp) respectively. [Table 1.1]

Number and density of Cardiac Catheterisation Lab in Malaysia

The number of cardiac catheterisation lab had increased significantly for the last 3 years from 55 to 69 (55 in private hospitals and 14 in public hospitals) which translated into 2.3 laboratories pmp as compared to 2.0 pmp in the previous report. There were no public cardiac catheterisation laboratories in Perlis, Melaka and Negeri Sembilan and none in the private sector in Terengganu.

The distribution of cardiac catheterisation labs were also uneven, and which were highest in WPKL (6.9 pmp) followed by Pulau Pinang (6 pmp) and Melaka (3.5). The region with the lower density were Perlis (0), Sabah (0.5 pmp) and Terengganu (0.8 pmp). [Table 1.3]

Several studies have shown that cardiac patients have improved outcome if part of their care is provided by cardiologists with cardiac catheterisation lab facilities. In the USA, patients who have a myocardial infarction or

develop heart failure in the areas with low density of cardiologists have a slightly higher risk of death at 30 days and one year compared with those who have the same clinical events in an area with higher density[4].

Hopefully by the year 2020, Malaysia can achieve the target of at least 10 cardiologists pmp with cardiac catheterisation lab in all MOH tertiary hospitals. If we can train at least another 80 cardiologists, we can have 300 cardiologists serving a 30 million population. At present less than 10 fellow cardiologists completed their training annually nationwide. Hence, major training centres in MOH, Institut Jantung Negara and universities have to recruit at least 16 new fellows annually, 9-10 in MOH, 3-4 in IJN and another 3-4 from universities.

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Table 1.1 Number and Density of Cardiologist in Malaysia by State and Sector, 2014

State	Sector	Number	Population in Malaysia (2013)*	Per 10,000 population
Malaysia	Public	35		
Malaysia	Private	184		
Malaysia	**Total**	**219**	**29,947,600**	**0.073**
Perlis	Public	-		
Perlis	Private	-		
Perlis	**Total**	**-**	**240,200**	**-**
Kedah	Public	0		
Kedah	Private	8		
Kedah	**Total**	**8**	**2,012,500**	**0.039**
Pulau Pinang	Public	5		
Pulau Pinang	Private	28		
Pulau Pinang	**Total**	**33**	**1,647,700**	**0.200**
Perak	Public	1		
Perak	Private	13		
Perak	**Total**	**14**	**2,446,600**	**0.057**
Selangor & WP Putrajaya	Public	4		
Selangor & WP Putrajaya	Private	30		
Selangor & WP Putrajaya	**Total**	**34**	**5,871,200**	**0.058**
WP Kuala Lumpur	Public	9		
WP Kuala Lumpur	Private	63		
WP Kuala Lumpur	**Total**	**72**	**1,724,500**	**0.418**
Negeri Sembilan	Public	0		
Negeri Sembilan	Private	3		
Negeri Sembilan	**Total**	**3**	**1,079,800**	**0.027**
Melaka	Public	0		
Melaka	Private	8		
Melaka	**Total**	**8**	**849,400**	**0.094**
Johor	Public	2		
Johor	Private	8		
Johor	**Total**	**10**	**3,496,600**	**0.028**
Pahang	Public	3		
Pahang	Private	5		
Pahang	**Total**	**8**	**1,571,700**	**0.051**
Kelantan	Public	1		
Kelantan	Private	2		
Kelantan	**Total**	**3**	**1,675,100**	**0.017**
Terengganu	Public	1		
Terengganu	Private	1		
Terengganu	**Total**	**2**	**1,125,000**	**0.017**
Sabah & WP Labuan	Public	1		
Sabah & WP Labuan	Private	5		
Sabah & WP Labuan	**Total**	**6**	**3,587,900**	**0.016**
Sarawak	Public	8		
Sarawak	Private	10		
Sarawak	**Total**	**18**	**2,619,300**	**0.068**

Indicator Demographics Malaysia 2013 was referred as the data for 2014 was not available at the publication of this report.

Table 1.2 Number and Density of Hospital with Catheterisation Laboratory in Malaysia by State and Sector, 2014

State	Sector	Number	Population in Malaysia (2013)*	Per 10,000 population
Malaysia	Public	14		
Malaysia	Private	55		
Malaysia	**Total**	**69**	**29,947,600**	**0.023**
Perlis	Public	-		
Perlis	Private	-		
Perlis	**Total**	**-**	**240,200**	**-**
Kedah	Public	1		
Kedah	Private	5		
Kedah	**Total**	**6**	**2,012,500**	**0.029**
Pulau Pinang	Public	1		
Pulau Pinang	Private	9		
Pulau Pinang	**Total**	**10**	**1,647,700**	**0.060**
Perak	Public	1		
Perak	Private	3		
Perak	**Total**	**4**	**2,446,600**	**0.016**
Selangor & WP Putrajaya	Public	2		
Selangor & WP Putrajaya	Private	14		
Selangor & WP Putrajaya	**Total**	**16**	**5,871,200**	**0.027**
WP Kuala Lumpur	Public	3		
WP Kuala Lumpur	Private	9		
WP Kuala Lumpur	**Total**	**12**	**1,724,500**	**0.069**
Negeri Sembilan	Public	-		
Negeri Sembilan	Private	2		
Negeri Sembilan	**Total**	**2**	**1,079,800**	**0.018**
Melaka	Public	-		
Melaka	Private	3		
Melaka	**Total**	**3**	**849,400**	**0.035**
Johor	Public	1		
Johor	Private	3		
Johor	**Total**	**4**	**3,496,600**	**0.011**
Pahang	Public	1		
Pahang	Private	1		
Pahang	**Total**	**2**	**1,571,700**	**0.012**
Kelantan	Public	1		
Kelantan	Private	1		
Kelantan	**Total**	**2**	**1,675,100**	**0.011**
Terengganu	Public	1		
Terengganu	Private	-		
Terengganu	**Total**	**1**	**1,125,000**	**0.008**
Sabah & WP Labuan	Public	1		
Sabah & WP Labuan	Private	1		
Sabah & WP Labuan	**Total**	**2**	**3,587,900**	**0.005**
Sarawak	Public	1		
Sarawak	Private	4		
Sarawak	**Total**	**5**	**2,619,300**	**0.019**

* Indicator Demographics Malaysia 2013 was referred as the data for 2014 was not available at the publication of this report.

Table 1.3 Number and Density of Catheterisation Laboratory in Malaysia by State and Sector, 2014

State	Sector	Number	Population in Malaysia (2013)*	Per 10,000 population
Malaysia	Public	19		
Malaysia	Private	66		
Malaysia	**Total**	**85**	**29,947,600**	**0.028**
Perlis	Public	-		
Perlis	Private	-		
Perlis	**Total**	**-**	**240,200**	**-**
Kedah	Public	1		
Kedah	Private	5		
Kedah	**Total**	**6**	**2,012,500**	**0.029**
Pulau Pinang	Public	2		
Pulau Pinang	Private	12		
Pulau Pinang	**Total**	**14**	**1,647,700**	**0.084**
Perak	Public	1		
Perak	Private	3		
Perak	**Total**	**4**	**2,446,600**	**0.016**
Selangor & WP Putrajaya	Public	3		
Selangor & WP Putrajaya	Private	15		
Selangor & WP Putrajaya	**Total**	**18**	**5,871,200**	**0.030**
WP Kuala Lumpur	Public	6		
WP Kuala Lumpur	Private	16		
WP Kuala Lumpur	**Total**	**22**	**1,724,500**	**0.127**
Negeri Sembilan	Public	-		
Negeri Sembilan	Private	2		
Negeri Sembilan	**Total**	**2**	**1,079,800**	**0.018**
Melaka	Public	-		
Melaka	Private	3		
Melaka	**Total**	**3**	**849,400**	**0.035**
Johor	Public	1		
Johor	Private	3		
Johor	**Total**	**4**	**3,496,600**	**0.011**
Pahang	Public	1		
Pahang	Private	1		
Pahang	**Total**	**2**	**1,571,700**	**0.013**
Kelantan	Public	1		
Kelantan	Private	1		
Kelantan	**Total**	**2**	**1,675,100**	**0.011**
Terengganu	Public	1		
Terengganu	Private	-		
Terengganu	**Total**	**1**	**1,125,000**	**0.008**
Sabah & WP Labuan	Public	1		
Sabah & WP Labuan	Private	1		
Sabah & WP Labuan	**Total**	**2**	**3,587,900**	**0.005**
Sarawak	Public	1		
Sarawak	Private	4		
Sarawak	**Total**	**5**	**2,619,300**	**0.019**

Indicator Demographics Malaysia 2013 was referred as the data for 2014 was not available at the publication of this report.

CHAPTER 2: PATIENT CHARACTERISTICS

Alan Fong Yean Yip[1], Paras Doshi[2], Ong Tiong Kiam[1]
1 Pusat Jantung Hospital Umum Sarawak, 2 Hospital Kuala Lumpur

Summary

1. Malaysian ACS patients were younger compared to western registries, in particular among the STEMI sub-group. Indians and Malays were more likely to present with an ACS event at a younger age.

2. The prevalence of hypertension, diabetes and dyslipidaemia remained consistently high over the three years period.

3. Patients with NSTEMI/UA had higher prevalence of hypertension, diabetes and dyslipidaemia compared to STEMI whereas smoking was higher in STEMI.

Introduction

Data from 14,763 patients admitted between 2011 and 2013 in 19 source data providers participating in the National Cardiovascular Disease Database – Acute Coronary Syndrome Registry was analysed.

Age, Gender, Ethnic and Body Mass Index

The majority of patients who presented with ACS were male, and the prevalence appeared to be rising – 77.8%, 79.0% and 79.4%, in 2011, 2012 and 2013, respectively. [Table 2.1]

The mean age of these patients was 58.5 years, which was similar in the years 2011, 2012 and 2013. The overall proportion of patients under the age of 50 years presenting with ACS remained high at 23.2%. When analysed by gender, 27.5% of male patients and 11.6% of female patients were under the age of 50 years. [Table 2.1]

In the total cohort of 14,763 patients, 50.6% were Malay, 21.5% were Chinese, and 19.6% were Indian. Non-Malaysians (foreigners) accounted for 2.6% of the entire cohort. We analysed the data of the three largest ethnic groups. Amongst Malays, 27.7% of male patients and 13.6% of female patients were under the age of 50 years. Amongst Chinese, 18.6% of male patients, and 5.9% of female patients were under the age of 50 years; amongst Indians, 29.2% of male patients, and 12.4% of female patients were under the age of 50 years. [Table 2.1]

The mean body mass index (BMI) of these patients was 26.1 kg/m^2. There was an increasing trend in the mean BMI – 25.9 kg/m^2, 25.9 kg/m^2 and 26.3 kg/m^2 in 2011, 2012 and 2013, respectively. The proportion of patients with BMI > 23.0 kg/m^2 demonstrated a corresponding increase: 75.6%, 75.0% and 78.2% in 2011, 2012 and 2013, respectively. [Table 2.1]

Cardiovascular risk factors

The prevalence of pre-morbid hypertension, diabetes and dyslipidaemia in this cohort were 65.0%, 45.8% and 37.4%, respectively. The prevalence of these established cardiovascular risk factors (CVRF) remained consistently high during the 3-year period. Of the other CVRF among these patients, a prior history of myocardial infarction (MI) was noted in 19.2%, documented CAD in 21.1%, chronic angina in 9.9%, new onset angina in 58.2%, a prior history of heart failure in 7.2% and cerebrovascular disease in 3.8%. The prevalence of renal disease was 7.8%, chronic lung disease was 3.2% and peripheral vascular disease was 0.8%. [Table 2.1]

Of the total cohort, 77.6% had a positive history of coronary artery disease, with at least one previous history of MI, documented CAD, chronic angina or new onset angina. [Table 2.1]

The prevalence of smoking was high, especially in those under the age of 50 years presenting with ACS: 38.2% were males and 21.0% were females. [Table 2.4.6]

The prevalence of the following risk factors in patients under the age of 50 years were: diabetes - 19.0% in males, 9.4% in females; hypertension – 19.7% in males, 8.4% in females; dyslipidaemia – 21.0% in males, 9.4% in females; and family history of premature cardiovascular disease – 35.9% in males, 18.3% in females. [Table 2.4.2, 2.4.3, 2.4.4 & 2.4.5]

Clinical presentation

The proportion of patients presenting with the different clinical presentations of ACS were as follows: 50.8% with STEMI, 26.0% with NSTEMI and 23.2% with unstable angina (UA). [Table 2.6]

The mean age of patients presenting with STEMI was 56.2 years, NSTEMI was 60.8 years and UA was 60.8 years. The proportion of patients under the age of 50 years was 30.2%, 17.6% and 18.3% in the STEMI, NSTEMI and UA groups, respectively. The proportion of male gender was 85.2%, 75.0% and 69.0% in the STEMI, NSTEMI and UA groups, respectively. Current smokers accounted for 51.0%, 27.2% and 21.0% in the STEMI, NSTEMI and UA groups, respectively. [Table 2.7]

The prevalence of pre-morbid dyslipidaemia was higher in NSTEMI (42.8%) and UA (49.2%) compared to STEMI (28.2%). Similarly, the prevalence of pre-morbid hypertension was higher in NSTEMI (71.6%) and UA (77.0%) compared to STEMI (55.6%). [Table 2.7]

The same finding was noted for pre-morbid diabetes which was higher in NSTEMI (52.8%) and UA (51.4%) compared to STEMI (39.3%). The prevalence of a previous history of MI, previously documented CAD, history of chronic angina; new onset angina and heart failure were higher in NSTEMI/UA compared to STEMI.

Conclusion

Patients who presented with ACS in Malaysia between 2011 and 2013 were relatively younger compared to GRACE registry[1,2]. The prevalence of pre-morbid cardiovascular risk factors in this population remained high. However, patients with STEMI had lower prevalence of established CVRF compared to those with NSTEMI and UA, probably related to a comparatively younger mean age of presentation. Malay and Indian patients were more likely to present with an ACS event at a younger age compared to Chinese patients.

Initiatives to improve the management of cardiovascular risk factors at the acute stage of ACS clinical presentation are warranted, with the aim of improving clinical outcomes of these patients.

References

1. Global Registry for Acute Coronary Effect – GRACE. Available at http://www.outcomes-umassmed.org/grace/. Accessed on February 2015.

2. Chan MY, Shah BR, Gao F, et al. Recalibration of the Global Registry of Acute Coronary Events risk score in a multiethnic Asian population. *Am Heart J.* 2011; 162(2):291-9.

Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2011-2013

Year	2011	2012	2013	2011-2013
Total	**4,047**	**4,589**	**6,127**	**14,763**
DEMOGRAPHICS				
Age, years				
N	4,047	4,589	6,127	14,763
Mean (SD)	58.6 (12.3)	58.5 (12.3)	58.4 (12.0)	58.5 (12.2)
Median (min, max)	58.2 (21.1, 98.4)	58.5 (20.3, 100.9)	58.0 (20.0, 101.9)	58.2 (20.0, 101.9)
IQR	17.1	16.7	16.1	16.6
Age group, No. (%)				
20 - <30	44 (1.0)	44 (1.0)	53 (0.8)	141 (1.0)
30 - <40	200 (5.0)	263 (5.7)	354 (5.8)	817 (5.6)
40 - <50	749 (18.6)	824 (18.0)	1,033 (16.8)	2,606 (17.6)
50 - <60	1,250 (30.8)	1,387 (30.2)	2,011 (32.8)	4,648 (31.4)
60 - <70	999 (24.6)	1,207 (26.3)	1,558 (25.4)	3,764 (25.4)
70 - <80	658 (16.3)	687 (15.0)	915 (15.0)	2,260 (15.4)
≥ 80	147 (3.7)	177 (3.8)	203 (3.4)	527 (3.6)
Gender, No. (%)				
Male	3,145 (77.8)	3,628 (79.0)	4,865 (79.4)	11,638 (78.8)
Female	902 (22.2)	961 (21.0)	1,262 (20.6)	3,125 (21.2)
Ethnic group, No. (%)				
Malay	1,991 (49.2)	2,292 (50.0)	3,176 (51.8)	7,459 (50.6)
Chinese	868 (21.4)	993 (21.6)	1,313 (21.5)	3,174 (21.5)
Indian	897 (22.3)	883 (19.2)	1,124 (18.5)	2,904 (19.6)
Orang Asli	2 (0.0)	1 (0.0)	5 (0.0)	8 (0.0)
Kadazan	33 (0.8)	37 (0.8)	65 (1.0)	135 (1.0)
Melanau	4 (0.0)	1 (0.0)	5 (0.0)	10 (0.0)
Murut	1 (0.0)	4 (0.0)	6 (0.0)	11 (0.0)
Bajau	30 (0.8)	35 (0.8)	48 (0.8)	113 (0.8)
Bidayuh	17 (0.5)	24 (0.6)	39 (0.6)	80 (0.6)
Iban	42 (1.0)	70 (1.6)	72 (1.2)	184 (1.3)
Other Malaysian	70 (1.8)	117 (2.6)	117 (2.0)	304 (2.0)
Foreigner	92 (2.2)	132 (2.8)	157 (2.6)	381 (2.6)
OTHER CORONARY RISK FACTORS				
Smoking, No. (%)				
Never	1,533 (39.2)	1,687 (38.0)	2,171 (36.2)	5,391 (37.5)
Former (quit >30 days)	835 (21.4)	942 (21.3)	1,282 (21.4)	3,059 (21.4)
Current (any tobacco use within last 30 days)	1,469 (37.6)	1,679 (37.8)	2,295 (38.2)	5,443 (38.0)
Not Available	70 (1.8)	123 (2.9)	252 (4.2)	445 (3.1)
Missing	140	158	127	425

Year	2011	2012	2013	2011-2013
Total	**4,047**	**4,589**	**6,127**	**14,763**
Family history of Premature CVD, No. (%)				
Yes	525 (14.5)	554 (13.2)	696 (12.4)	1,775 (13.2)
No	2,518 (69.0)	2,805 (67.0)	4,005 (70.8)	9,328 (69.2)
Unknown	601 (16.5)	830 (19.8)	953 (16.8)	2,384 (17.6)
Missing	403	400	473	1,276
ANTHROPOMETRICS				
Body Mass Index (BMI), kgm^{-2}				
N	1,307	1,690	2,173	5,170
Mean (SD)	25.9 (4.3)	25.9 (4.1)	26.3 (4.4)	26.1 (4.3)
Median (min, max)	25.5 (14.7, 49.8)	25.6 (15.6, 48.1)	26.0 (14.6, 47.9)	25.7 (14.6, 49.8)
IQR	4.9	5.3	5.6	5.3
Missing	2,740	2,899	3,954	9,593
BMI, kgm^{-2}, No. (%)				
<18.5	34 (2.6)	47 (2.7)	48 (2.2)	129 (2.5)
18.5 - 23	285 (21.8)	377 (22.3)	424 (19.6)	1,086 (21.0)
>23	988 (75.6)	1,266 (75.0)	1,701 (78.2)	3,955 (76.5)
Missing	2,740	2,899	3,954	9,593
Waist Hip Ratio (WHR)				
N	795	760	1177	2732
Mean (SD)	1.0 (0.2)	1.0 (0.1)	1.0 (0.1)	1.0 (0.2)
Median (min, max)	1.0 (0.7, 2.5)	1.0 (0.7, 2.0)	1.0 (0.7, 2.9)	1.0 (0.7, 2.9)
IQR	0.1	0.1	0.1	0.1
Missing	3,252	3,829	4,950	12,031
WHR, No. (%)				
Men	662	639	990	2,291
≤1.0	489 (73.8)	458 (71.6)	718 (72.6)	1,665 (72.6)
>1.0	173 (26.2)	181 (28.4)	272 (27.4)	626 (27.4)
Women	133	121	187	441
≤0.85	17 (12.8)	17 (14.0)	21 (11.2)	55 (12.4)
>0.85	116 (87.2)	104 (86.0)	166 (88.8)	386 (87.6)

Year	2011	2012	2013	2011-2013
Total	**4,047**	**4,589**	**6,127**	**14,763**
Waist circumference, cm				
N	687	706	1,075	2,468
Mean (SD)	93.4 (10.0)	92.6 (10.8)	92.5 (10.9)	92.7 (10.6)
Median (min, max)	93.0 (70.0, 129.0)	91.5 (70.0, 124.0)	92.0 (70.0, 130.0)	92.0 (70.0, 130.0)
IQR	12.0	15.0	14.0	14.0
Not Available	2,687 (79.6)	3,086 (81.4)	4,008 (78.8)	9,781 (79.8)
Missing	673	797	1,044	2,514
Waist circumference, cm, No. (%)				
Men	2,622	3,027	4,055	9,704
≤90	239 (9.1)	281 (9.2)	407 (10.0)	927 (9.6)
>90	340 (13.0)	318 (10.6)	494 (12.2)	1,152 (11.8)
Not Available	2,043 (77.9)	2,428 (80.2)	3,154 (77.8)	7,652 (78.6)
Women	752	765	1,028	2,545
≤80	15 (2.0)	23 (3.0)	33 (3.2)	71 (2.8)
>80	93 (12.4)	84 (11.0)	141 (13.8)	318 (12.4)
Not Available	644 (85.6)	658 (86.0)	854 (83.0)	2,156 (84.8)
CO-MORBIDITY				
Dyslipidaemia, No. (%)				
Yes	1,459 (39.2)	1,538 (36.4)	2,103 (37.0)	5,100 (37.4)
No	1,785 (48.0)	2,165 (51.4)	2,970 (52.2)	6,920 (50.8)
Unknown	472 (12.8)	513 (12.2)	608 (10.8)	1,593 (11.8)
Missing	331	373	446	1,150
Hypertension, No. (%)				
Yes	2,547 (67.0)	2,797 (65.6)	3,630 (63.2)	8,974 (65.0)
No	1,106 (29.2)	1,259 (29.6)	1,857 (32.4)	4,222 (30.6)
Unknown	145 (3.8)	202 (4.8)	258 (4.4)	605 (4.4)
Missing	249	331	382	962
Diabetes, No. (%)				
Yes	1,742 (46.2)	1,974 (46.6)	2,568 (45.0)	6,284 (45.8)
No	1,821 (48.4)	2,023 (47.6)	2,794 (49.0)	6,638 (48.4)
Unknown	200 (5.4)	246 (5.8)	346 (6.0)	792 (5.8)
Missing	284	346	419	1,049

Year	2011	2012	2013	2011-2013
Total	**4,047**	**4,589**	**6,127**	**14,763**
Fasting blood glucose, mmol/L				
N	2,902	3,170	4,201	10,273
Mean (SD)	8.2 (4.2)	8.2 (4.0)	8.4 (4.3)	8.3 (4.2)
Median (min, max)	6.8 (3.0, 49.0)	6.9 (3.0, 44.4)	6.9 (3.0, 49.9)	6.9 (3.0, 49.9)
IQR	3.8	3.8	4.1	3.9
Not Done	886 (23.4)	1,129 (26.2)	1,292 (23.6)	3,307 (24.4)
Missing	259	290	634	1,183
Myocardial infarction history, No. (%)				
Yes	805 (22.0)	873 (20.8)	922 (16.2)	2,600 (19.2)
No	2,557 (70.0)	2,903 (69.5)	4,195 (74.0)	9,655 (71.5)
Unknown	294 (8.0)	403 (9.7)	557 (9.8)	1,254 (9.3)
Missing	391	410	453	1,254
*Documented CAD, No. (%)				
Yes	628 (17.3)	844 (20.2)	1,380 (24.4)	2,852 (21.2)
No	2,484 (66.2)	2,767 (66.2)	3,760 (66.4)	9,011 (66.8)
Unknown	519 (14.3)	569 (13.6)	526 (9.2)	1,614 (12.0)
Missing	416	409	461	1,286
Chronic angina (onset more than 2 weeks ago), No. (%)				
Yes	413 (11.4)	400 (9.6)	530 (9.4)	1,343 (9.9)
No	2,981 (81.6)	3,445 (82.4)	4,743 (84.0)	11,169 (83.0)
Unknown	255 (7.0)	333 (8.0)	369 (6.6)	957 (7.1)
Missing	398	411	485	1,294
New onset angina (less than 2 weeks), No. (%)				
Yes	2,271 (61.4)	2,413 (57.6)	3,216 (56.4)	7,900 (58.2)
No	1,309 (35.4)	1,597 (38.2)	2,195 (38.4)	5,101 (37.5)
Unknown	122 (3.2)	175 (4.2)	292 (5.2)	589 (4.3)
Missing	345	404	424	1,173
Heart failure, No. (%)				
Yes	312 (8.6)	363 (8.6)	295 (5.3)	970 (7.2)
No	3,162 (87.0)	3,586 (85.6)	5,006 (88.7)	11,754 (87.2)
Unknown	162 (4.4)	240 (5.8)	344 (6.0)	746 (5.6)
Missing	411	400	482	1,293

Year	2011	2012	2013	2011-2013
Total	**4,047**	**4,589**	**6,127**	**14,763**
Chronic lung disease, No. (%)				
Yes	129 (3.6)	120 (2.8)	176 (3.1)	425 (3.2)
No	3,318 (91.4)	3,828 (91.4)	5,129 (90.9)	12,275 (91.2)
Unknown	180 (5.0)	244 (5.8)	337 (6.0)	761 (5.6)
Missing	420	397	485	1,302
*Renal disease, No. (%)				
Yes	298 (8.2)	301 (7.2)	444 (7.8)	1,043 (7.8)
No	3,182 (87.0)	3,652 (87.2)	4,891 (86.6)	11,725 (86.8)
Unknown	174 (4.8)	235 (5.6)	317 (5.6)	726 (5.4)
Missing	393	401	475	1,269
Cerebrovascular disease, No. (%)				
Yes	155 (4.2)	153 (3.6)	201 (3.5)	509 (3.8)
No	3,308 (91.3)	3,797 (90.8)	5,114 (90.7)	12,219 (90.8)
Unknown	162 (4.5)	232 (5.6)	322 (5.8)	716 (5.4)
Missing	422	407	490	1,319
Peripheral vascular disease, No. (%)				
Yes	40 (1.2)	30 (0.8)	34 (0.6)	104 (0.8)
No	3,378 (93.6)	3,899 (93.5)	5,249 (93.4)	12,526 (93.5)
Unknown	188 (5.2)	240 (5.7)	336 (6.0)	764 (5.7)
Missing	441	420	508	1,369
None of the above, No. (%)				
Yes	185 (4.6)	279 (6.0)	301 (5.0)	765 (5.2)
No	3,862 (95.4)	4,310 (94.0)	5,826 (95.0)	13,998 (94.8)
**Coronary artery disease, No. (%)				
Yes	2,828 (79.4)	3,019 (76.6)	4,170 (77.0)	10,017 (77.6)
No	736 (20.6)	919 (23.4)	1,252 (23.0)	2,907 (22.4)

Definition is different in CRF version 2013
** Coronary artery disease is defined as "Yes" to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD, 3) Chronic
angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)*
Note: 'Unknown' includes patients who do not know their co-morbidities status

Table 2.2 Distribution of patients with ACS by Source Data Providers, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
	No.	%	No.	%	No.	%	No.	%
Total								
Source Data Provider								
Hospital Pulau Pinang	626	15.4	775	16.9	1,173	19.2	2,574	17.4
Hospital Serdang	505	12.4	508	11.0	830	13.6	1,843	12.4
Hospital Sultanah Aminah	428	10.6	417	9.1	627	10.2	1,472	10.0
Institut Jantung Negara	281	7.0	413	9.0	477	7.8	1,171	8.0
Hospital Tengku Ampuan Afzan	274	6.8	330	7.2	547	9.0	1,151	7.8
Pusat Jantung Hospital Umum Sarawak	220	5.4	378	8.2	454	7.4	1,052	7.2
Hospital Kuala Lumpur	302	7.4	371	8.1	317	5.2	990	6.8
Pusat Perubatan Universiti Malaya	381	9.4	267	5.8	198	3.2	846	5.8
Hospital Queen Elizabeth II	144	3.6	244	5.4	315	5.1	703	4.8
Hospital Sultanah Bahiyah	114	2.8	250	5.4	331	5.4	695	4.7
Hospital Raja Permaisuri Bainun	200	5.0	219	4.8	207	3.4	626	4.2
Hospital Sultanah Nur Zahirah	83	2.0	72	1.6	212	3.4	367	2.4
Hospital Tengku Ampuan Rahimah	104	2.6	95	2.1	106	1.8	305	2.0
Hospital Melaka	207	5.2	1	0.0	87	1.4	295	1.9
Hospital Tuanku Fauziah	83	2.0	85	1.9	107	1.8	275	1.8
Hospital Ampang	32	0.8	104	2.3	63	0.9	199	1.4
Hospital Raja Perempuan Zainab II	17	0.4	38	0.8	67	1.0	122	0.8
Hospital Tuanku Ja'afar	22	0.6	20	0.4	9	0.2	51	0.4
Hospital Queen Elizabeth I	24	0.6	2	0.0	0	0.0	26	0.2
TOTAL	**4,047**	**100.0**	**4,589**	**100.0**	**6,127**	**100.0**	**14,763**	**100.0**

Note: Each SDP started to contribute data at different time period

Table 2.3 Age-gender distribution of patients with ACS, NCVD-ACS Registry, 2011-2013

Age group	2011		2012		2013		2011-2013	
	Total no. of patients = 4,047		Total no. of patients = 4,589		Total no. of patients = 6,127		Total no. of patients = 14,763	
	Male	Female	Male	Female	Male	Female	Male	Female
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
20-<30	41 (1.5)	3 (0.4)	40 (1.2)	4 (0.4)	51 (1.0)	2 (0.2)	132 (1.2)	9 (0.2)
30-<40	191 (6.0)	9 (1.0)	246 (6.8)	17 (1.8)	323 (6.6)	31 (2.4)	760 (6.6)	57 (1.8)
40-<50	660 (21.0)	89 (9.8)	744 (20.6)	80 (8.4)	903 (18.6)	130 (10.4)	2307 (19.7)	299 (9.6)
50-<60	1,059 (33.6)	191 (21.2)	1,169 (32.2)	218 (22.6)	1,696 (34.8)	315 (25.0)	3,924 (33.7)	724 (23.2)
60-<70	719 (22.9)	280 (31.0)	910 (25.0)	297 (31.0)	1,198 (24.6)	360 (28.5)	2,827 (24.2)	937 (30.0)
70-<80	399 (12.6)	259 (28.8)	429 (11.8)	258 (26.8)	581 (12.0)	334 (26.3)	1,409 (12.2)	851 (27.2)
≥80	76 (2.4)	71 (7.8)	90 (2.4)	87 (9.0)	113 (2.4)	90 (7.2)	279 (2.4)	248 (8.0)
Total	**3,145 (100.0)**	**902 (100.0)**	**3,628 (100.0)**	**961 (100.0)**	**4,865 (100.0)**	**1,262 (100.0)**	**11,638 (100.0)**	**3,125 (100.0)**

Table 2.4.1 Age-gender distribution of patients with ACS by ethnic group, NCVD-ACS Registry, 2011-2013

Ethnic group

Gender	Age group	2011 Malay No. (%)	2011 Chinese No. (%)	2011 Indian No. (%)	2011 Others## No. (%)	2012 Malay No. (%)	2012 Chinese No. (%)	2012 Indian No. (%)	2012 Others## No. (%)	2013 Malay No. (%)	2013 Chinese No. (%)	2013 Indian No. (%)	2013 Others## No. (%)	2011-2013 Malay No. (%)	2011-2013 Chinese No. (%)	2011-2013 Indian No. (%)	2011-2013 Others## No. (%)
Male	20 - <30	20 (1.3)	1 (0.2)	8 (1.2)	12 (5.0)	21 (1.2)	1 (0.2)	10 (1.4)	8 (2.2)	27 (1.0)	3 (0.2)	11 (1.4)	10 (2.2)	68 (1.2)	5 (0.2)	29 (1.4)	30 (2.8)
	30 - <40	98 (6.0)	21 (3.2)	41 (6.2)	31 (13.0)	112 (6.0)	37 (5.2)	48 (7.3)	49 (13.6)	175 (6.8)	28 (2.8)	49 (6.0)	71 (16.0)	385 (6.4)	86 (3.6)	138 (6.4)	151 (14.6)
	40 - <50	348 (21.7)	98 (15.4)	146 (22.3)	68 (28.4)	391 (20.8)	110 (15.2)	143 (21.4)	100 (28.0)	486 (18.8)	145 (14.2)	168 (20.6)	104 (23.4)	1225 (20.1)	353 (14.8)	457 (21.4)	272 (26.2)
	50 - <60	576 (35.8)	180 (28.2)	244 (37.3)	59 (24.6)	640 (34.0)	200 (27.8)	229 (34.3)	100 (28.0)	914 (35.2)	321 (31.6)	309 (37.8)	152 (34.2)	2130 (35.0)	701 (29.6)	782 (36.5)	311 (29.8)
	60 - <70	349 (21.6)	192 (30.0)	138 (21.0)	40 (16.8)	474 (25.2)	207 (28.6)	161 (24.0)	68 (19.0)	664 (25.6)	283 (28.0)	181 (22.2)	70 (15.8)	1487 (24.4)	682 (28.8)	480 (22.4)	178 (17.0)
	70 - <80	193 (12.0)	126 (19.8)	58 (8.8)	22 (9.2)	213 (11.4)	126 (17.4)	63 (9.4)	27 (7.6)	285 (11.0)	182 (18.0)	84 (10.2)	30 (6.8)	691 (11.3)	434 (18.2)	205 (9.5)	79 (7.6)
	≥80	27 (1.6)	21 (3.2)	21 (3.2)	7 (3.0)	28 (1.4)	41 (5.6)	15 (2.2)	6 (1.6)	39 (1.6)	52 (5.2)	15 (1.8)	7 (1.6)	94 (1.6)	114 (4.8)	51 (2.4)	20 (2.0)
	Total	1,611 (100)	639 (100)	656 (100)	239 (100)	1,879 (100)	722 (100)	669 (100)	358 (100)	2,590 (100)	1,014 (100)	817 (100)	444 (100)	6,080 (100)	2,375 (100)	2,142 (100)	1,041 (100)
Female	20 - <30	1 (0.2)	0 (0.0)	1 (0.4)	1 (2.0)	3 (0.8)	0 (0.0)	0 (0.0)	1 (1.6)	2 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	6 (0.4)	0 (0.0)	1 (0.2)	2 (1.0)
	30 - <40	7 (1.8)	0 (0.0)	1 (0.4)	1 (2.0)	9 (2.2)	2 (0.7)	5 (2.4)	1 (1.6)	16 (2.8)	1 (0.4)	10 (3.1)	4 (5.8)	32 (2.4)	3 (0.4)	16 (2.0)	6 (3.3)
	40 - <50	42 (11.0)	12 (5.2)	27 (11.3)	8 (15.4)	34 (8.2)	21 (7.8)	18 (8.4)	7 (11.1)	72 (12.2)	11 (3.6)	33 (10.7)	14 (20.0)	148 (10.8)	44 (5.5)	78 (10.2)	29 (15.6)
	50 - <60	80 (21.0)	29 (12.6)	69 (28.6)	13 (25.0)	100 (24.2)	34 (12.6)	65 (30.4)	19 (30.2)	167 (28.4)	44 (14.8)	82 (26.8)	22 (31.3)	347 (25.2)	107 (13.4)	216 (28.4)	54 (29.3)
	60 - <70	126 (33.3)	66 (28.8)	73 (30.2)	15 (28.8)	140 (33.9)	78 (28.7)	60 (28.0)	19 (30.2)	168 (28.6)	84 (28.0)	89 (29.0)	19 (27.2)	434 (31.4)	228 (28.5)	222 (29.2)	53 (28.6)
	70 - <80	101 (26.7)	90 (39.4)	56 (23.3)	12 (23.0)	101 (24.4)	91 (33.6)	52 (24.2)	14 (22.1)	132 (22.6)	115 (38.4)	81 (26.4)	6 (8.6)	334 (24.2)	296 (37.0)	189 (24.8)	32 (17.3)
	≥80	23 (6.0)	32 (14.0)	14 (5.8)	2 (3.8)	26 (6.3)	45 (16.6)	14 (6.6)	2 (3.2)	29 (5.0)	44 (14.8)	12 (4.0)	5 (7.1)	78 (5.6)	121 (15.2)	40 (5.2)	9 (4.9)
	Total	380 (100)	229 (100)	241 (100)	52 (100)	413 (100)	271 (100)	214 (100)	63 (100)	586 (100)	299 (100)	307 (100)	70 (100)	1,379 (100)	799 (100)	762 (100)	185 (100)

*Others' includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

Table 2.4.2 Age-gender distribution of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2011-2013

Gender	Age group	2011			2012			2013			2011-2013		
		Diabetic No. (%)	Non-diabetic No. (%)	Unknown No. (%)	Diabetic No. (%)	Non-diabetic No. (%)	Unknown No. (%)	Diabetic No. (%)	Non-diabetic No. (%)	Unknown No. (%)	Diabetic No. (%)	Non-diabetic No. (%)	Unknown No. (%)
Male	20 - <30	2 (0.2)	30 (2.0)	5 (3.0)	1 (0.0)	29 (1.7)	6 (2.8)	5 (0.2)	34 (1.4)	5 (1.7)	8 (0.2)	93 (1.6)	16 (2.5)
	30 - <40	49 (4.0)	110 (7.2)	13 (7.8)	55 (3.8)	122 (7.2)	24 (11.4)	64 (3.4)	194 (8.3)	29 (9.8)	168 (3.8)	426 (7.6)	66 (9.8)
	40 - <50	188 (15.6)	357 (23.5)	45 (27.0)	232 (16.5)	391 (23.0)	54 (25.6)	252 (13.6)	483 (20.6)	67 (22.4)	672 (15.0)	1,231 (22.2)	166 (24.6)
	50 - <60	430 (35.6)	494 (32.6)	51 (30.5)	487 (34.3)	544 (32.0)	59 (28.0)	710 (38.3)	784 (33.5)	88 (29.6)	1,627 (36.2)	1,822 (32.8)	198 (29.2)
	60 - <70	358 (29.6)	284 (18.7)	29 (17.3)	426 (30.0)	378 (22.2)	41 (19.4)	548 (29.5)	518 (22.0)	67 (22.5)	1,332 (29.6)	1,180 (21.2)	137 (20.3)
	70 - <80	152 (12.6)	199 (13.2)	22 (13.2)	180 (12.6)	201 (11.7)	23 (11.0)	243 (13.0)	271 (11.6)	34 (11.4)	575 (12.8)	671 (12.0)	79 (11.6)
	≥80	29 (2.4)	41 (2.8)	2 (1.2)	39 (2.8)	37 (2.2)	4 (1.8)	38 (2.0)	63 (2.6)	8 (2.6)	106 (2.4)	141 (2.6)	14 (2.0)
	Total	**1,208 (100)**	**1,515 (100)**	**167 (100)**	**1,420 (100)**	**1,702 (100)**	**211 (100)**	**1,860 (100)**	**2,347 (100)**	**298 (100)**	**4,488 (100)**	**5,564 (100)**	**676 (100)**
Female	20 - <30	0 (0)	3 (1.0)	0 (0)	0 (0)	3 (1.0)	1 (2.8)	0 (0)	2 (0.4)	0 (0)	0 (0)	8 (0.8)	1 (0.8)
	30 - <40	5 (1.0)	3 (1.0)	0 (0)	8 (1.4)	3 (1.0)	1 (2.8)	9 (1.2)	17 (3.8)	2 (4.2)	22 (1.2)	23 (2.2)	3 (2.6)
	40 - <50	47 (8.8)	35 (11.4)	1 (3.0)	36 (6.4)	28 (8.7)	6 (17.2)	63 (8.8)	51 (11.4)	9 (18.8)	146 (8.2)	114 (10.6)	16 (13.8)
	50 - <60	125 (23.4)	54 (17.6)	6 (18.2)	134 (24.3)	71 (22.1)	9 (25.7)	185 (26.3)	99 (22.2)	12 (25.0)	444 (24.7)	224 (20.8)	27 (23.3)
	60 - <70	172 (32.2)	85 (27.8)	12 (36.4)	192 (34.6)	82 (25.5)	6 (17.2)	235 (33.3)	98 (22.0)	14 (29.2)	599 (33.3)	265 (24.6)	32 (27.6)
	70 - <80	158 (29.6)	88 (28.8)	9 (27.2)	139 (25.0)	99 (30.7)	9 (25.7)	183 (25.8)	132 (29.5)	8 (16.6)	480 (26.8)	319 (29.8)	26 (22.5)
	≥80	27 (5.0)	38 (12.4)	5 (15.2)	45 (8.3)	35 (11.0)	3 (8.6)	33 (4.6)	48 (10.7)	3 (6.2)	105 (5.8)	121 (11.2)	11 (9.4)
	Total	**534 (100)**	**306 (100)**	**33 (100)**	**554 (100)**	**321 (100)**	**35 (100)**	**708 (100)**	**447 (100)**	**48 (100)**	**1,796 (100)**	**1,074 (100)**	**116 (100)**

Diabetes

Table 2.4.3 Age-gender distribution of patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2011-2013

Gender	Age group	2011 Hypertensive No. (%)	2011 Non-Hypertensive No. (%)	2011 Unknown No. (%)	2012 Hypertensive No. (%)	2012 Non-Hypertensive No. (%)	2012 Unknown No. (%)	2013 Hypertensive No. (%)	2013 Non-Hypertensive No. (%)	2013 Unknown No. (%)	2011-2013 Hypertensive No. (%)	2011-2013 Non-Hypertensive No. (%)	2011-2013 Unknown No. (%)
Male	20 - <30	8 (0.4)	24 (2.4)	5 (3.8)	4 (0.2)	26 (2.4)	6 (3.4)	7 (0.2)	31 (2.0)	6 (2.5)	19 (0.3)	81 (2.2)	17 (3.2)
	30 - <40	65 (3.7)	94 (9.8)	11 (8.5)	73 (3.6)	109 (9.8)	20 (11.2)	99 (3.7)	165 (10.2)	25 (11.0)	237 (3.7)	368 (10.0)	56 (10.3)
	40 - <50	285 (15.6)	272 (28.2)	37 (28.4)	320 (15.6)	307 (27.5)	51 (28.3)	386 (14.3)	374 (23.2)	52 (22.8)	991 (15.0)	953 (25.8)	140 (26.0)
	50 - <60	618 (33.8)	327 (33.8)	46 (35.5)	668 (32.6)	368 (33.0)	54 (30.0)	946 (35.0)	572 (35.6)	79 (34.3)	2,232 (34.0)	1,267 (34.4)	179 (33.2)
	60 - <70	516 (28.3)	149 (15.4)	17 (13.0)	614 (30.0)	206 (18.3)	31 (17.2)	777 (28.8)	319 (19.8)	41 (18.0)	1,907 (29.0)	674 (18.2)	89 (16.5)
	70 - <80	277 (15.2)	87 (9.0)	12 (9.2)	309 (15.0)	82 (7.4)	15 (8.4)	406 (15.0)	124 (7.8)	21 (9.2)	992 (15.0)	293 (8.0)	48 (9.0)
	≥80	56 (3.0)	14 (1.4)	2 (1.6)	60 (3.0)	18 (1.6)	3 (1.5)	83 (3.0)	22 (1.4)	5 (2.2)	199 (3.0)	54 (1.4)	10 (1.8)
	Total	**1,825 (100)**	**967 (100)**	**130 (100)**	**2,048 (100)**	**1,116 (100)**	**180 (100)**	**2,704 (100)**	**1,607 (100)**	**229 (100)**	**6,577 (100)**	**3,690 (100)**	**539 (100)**
Female	20 - <30	1 (0.2)	2 (1.5)	0 (0)	2 (0.2)	2 (1.4)	0 (0)	0 (0)	2 (0.8)	0 (0)	3 (0.2)	6 (1.2)	0 (0)
	30 - <40	4 (0.6)	4 (2.8)	0 (0)	8 (1.0)	3 (2.0)	1 (4.6)	8 (0.8)	17 (6.8)	3 (10.4)	20 (0.8)	24 (4.6)	4 (6.0)
	40 - <50	54 (7.4)	27 (19.5)	2 (13.4)	46 (6.3)	20 (14.0)	5 (22.8)	78 (8.4)	39 (15.6)	7 (24.2)	178 (7.4)	86 (16.2)	14 (21.3)
	50 - <60	151 (21.0)	34 (24.4)	1 (6.6)	171 (22.8)	35 (24.5)	6 (27.2)	218 (23.6)	71 (28.4)	6 (20.6)	540 (22.5)	140 (26.3)	13 (19.6)
	60 - <70	224 (31.0)	39 (28.0)	7 (46.6)	243 (32.5)	38 (26.6)	1 (4.6)	282 (30.4)	56 (22.4)	9 (31.0)	749 (31.1)	133 (25.0)	17 (25.8)
	70 - <80	233 (32.2)	20 (14.4)	3 (20.0)	205 (27.4)	38 (26.6)	7 (31.8)	270 (29.2)	51 (20.4)	3 (10.4)	708 (29.6)	109 (20.3)	13 (19.7)
	≥80	55 (7.6)	13 (9.4)	2 (13.4)	74 (9.8)	7 (4.9)	2 (9.0)	70 (7.6)	14 (5.6)	1 (3.4)	199 (8.4)	34 (6.4)	5 (7.6)
	Total	**722 (100)**	**139 (100)**	**15 (100)**	**749 (100)**	**143 (100)**	**22 (100)**	**926 (100)**	**250 (100)**	**29 (100)**	**2,397 (100)**	**532 (100)**	**66 (100)**

Table 2.4.4 Age-gender distribution of patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2011-2013

Gender	Age group	Dyslipidaemia											
		2011			2012			2013			2011-2013		
		Yes No. (%)	No No. (%)	Unknown No. (%)	Yes No. (%)	No No. (%)	Unknown No. (%)	Yes No. (%)	No No. (%)	Unknown No. (%)	Yes No. (%)	No No. (%)	Unknown No. (%)
Male	20 - <30	3 (0.2)	28 (2.0)	6 (1.6)	8 (0.6)	22 (1.2)	6 (1.4)	7 (0.4)	28 (1.2)	9 (1.8)	18 (0.4)	78 (1.4)	21 (1.6)
	30 - <40	48 (4.6)	100 (7.0)	21 (5.5)	47 (4.0)	124 (7.2)	32 (7.8)	67 (4.3)	181 (7.6)	37 (7.4)	162 (4.2)	405 (7.4)	90 (7.0)
	40 - <50	197 (18.5)	308 (21.6)	82 (21.7)	201 (17.3)	375 (21.6)	93 (22.4)	233 (14.4)	460 (19.4)	113 (22.4)	631 (16.4)	1,143 (20.6)	288 (22.2)
	50 - <60	350 (32.8)	478 (33.6)	135 (36.0)	390 (33.2)	567 (32.8)	132 (31.8)	583 (36.3)	832 (35.0)	161 (32.0)	1,323 (34.5)	1,877 (34.0)	428 (33.0)
	60 - <70	291 (27.3)	300 (21.0)	81 (21.6)	331 (28.3)	409 (23.6)	99 (24.0)	450 (28.0)	555 (23.4)	119 (23.5)	1,072 (27.8)	1,264 (22.8)	299 (23.2)
	70 - <80	155 (14.6)	167 (11.8)	47 (12.6)	173 (14.8)	187 (10.8)	44 (10.6)	226 (14.0)	266 (11.2)	53 (10.5)	554 (14.4)	620 (11.2)	144 (11.2)
	≥80	22 (2.0)	43 (3.0)	4 (1.0)	22 (1.8)	49 (2.8)	8 (2.0)	42 (2.6)	54 (2.2)	12 (2.4)	86 (2.3)	146 (2.6)	24 (1.8)
	Total	**1,066 (100)**	**1,424 (100)**	**376 (100)**	**1,172 (100)**	**1,733 (100)**	**414 (100)**	**1,608 (100)**	**2,376 (100)**	**504 (100)**	**3,846 (100)**	**5,533 (100)**	**1,294 (100)**
Female	20 - <30	0 (0)	2 (0.6)	1 (1.0)	0 (0)	3 (0.6)	1 (1.0)	1 (0.2)	1 (0.2)	0 (0)	1 (0.0)	6 (0.4)	2 (0.6)
	30 - <40	0 (0)	8 (2.2)	0 (0)	3 (0.8)	8 (1.8)	1 (1.0)	7 (1.4)	18 (3.0)	3 (2.8)	10 (0.8)	34 (2.5)	4 (1.5)
	40 - <50	35 (9.0)	45 (12.4)	3 (3.2)	24 (6.6)	40 (9.2)	8 (8.0)	50 (10.3)	60 (10.2)	12 (11.6)	109 (8.6)	145 (10.4)	23 (7.6)
	50 - <60	93 (23.6)	71 (19.6)	16 (16.6)	77 (21.0)	106 (24.6)	24 (24.3)	125 (25.3)	146 (24.5)	21 (20.2)	295 (23.6)	323 (23.3)	61 (20.5)
	60 - <70	124 (31.5)	103 (28.6)	31 (32.2)	122 (33.4)	125 (29.0)	30 (30.5)	140 (28.2)	167 (28.2)	36 (34.6)	386 (30.8)	395 (28.4)	97 (32.4)
	70 - <80	117 (29.7)	99 (27.4)	33 (34.4)	104 (28.4)	113 (26.2)	26 (26.2)	134 (27.0)	159 (26.7)	27 (26.0)	355 (28.4)	371 (26.8)	86 (28.8)
	≥80	24 (6.2)	33 (9.2)	12 (12.6)	36 (9.8)	37 (8.6)	9 (9.0)	38 (7.6)	43 (7.2)	5 (4.8)	98 (7.8)	113 (8.2)	26 (8.6)
	Total	**393 (100)**	**361 (100)**	**96 (100)**	**366 (100)**	**432 (100)**	**99 (100)**	**495 (100)**	**594 (100)**	**104 (100)**	**1,254 (100)**	**1,387 (100)**	**299 (100)**

Table 2.4.5 Age-gender distribution of patients with ACS by family history of premature cardiovascular disease, NCVD-ACS Registry, 2011-2013

Gender	Age group	Family History of Premature Cardiovascular Disease											
		2011			2012			2013			2011-2013		
		Yes	No	Unknown	Yes	No	Unknown	Yes	No	Unknown	Yes	No	Unknown
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Male	20 - <30	8 (1.8)	24 (1.2)	5 (1.2)	11 (2.4)	20 (1.0)	4 (0.6)	6 (1.0)	31 (1.0)	7 (1.0)	25 (1.8)	75 (1.0)	16 (0.8)
	30 - <40	46 (10.2)	106 (5.5)	16 (3.6)	43 (9.5)	112 (5.2)	45 (7.0)	49 (8.8)	185 (5.8)	51 (6.8)	138 (9.4)	403 (5.6)	112 (6.2)
	40 - <50	124 (27.6)	380 (19.7)	77 (17.6)	123 (26.8)	429 (19.5)	120 (18.8)	118 (21.0)	568 (18.0)	113 (15.0)	365 (24.7)	1,377 (19.0)	310 (17.0)
	50 - <60	167 (37.2)	645 (33.5)	133 (30.5)	146 (31.8)	742 (33.7)	190 (29.6)	237 (42.0)	1,089 (34.7)	246 (32.5)	550 (37.4)	2,476 (34.0)	569 (31.0)
	60 - <70	77 (17.2)	449 (23.3)	125 (28.6)	97 (21.3)	570 (26.0)	163 (25.4)	102 (18.2)	808 (25.6)	203 (27.0)	276 (18.8)	1,827 (25.2)	491 (26.8)
	70 - <80	19 (4.2)	272 (14.2)	71 (16.3)	35 (7.6)	272 (12.3)	93 (14.6)	45 (8.0)	386 (12.3)	111 (14.7)	99 (6.7)	930 (12.8)	275 (15.0)
	≥80	8 (1.8)	49 (2.6)	10 (2.2)	3 (0.6)	51 (2.3)	25 (4.0)	6 (1.0)	79 (2.6)	23 (3.0)	17 (1.2)	179 (2.4)	58 (3.2)
	Total	**449 (100)**	**1,925 (100)**	**437 (100)**	**458 (100)**	**2,196 (100)**	**640 (100)**	**563 (100)**	**3,146 (100)**	**754 (100)**	**1,470 (100)**	**7,267 (100)**	**1,831 (100)**
Female	20 - <30	2 (2.6)	1 (0.2)	0 (0)	0 (0)	3 (0.4)	1 (0.6)	0 (0)	2 (0.0)	0 (0)	2 (0.6)	6 (0.2)	1 (0.2)
	30 - <40	0 (0)	7 (1.2)	1 (0.6)	2 (2.0)	7 (1.2)	3 (1.6)	5 (3.8)	21 (2.4)	3 (1.6)	7 (2.3)	35 (1.6)	7 (1.2)
	40 - <50	15 (19.7)	56 (9.4)	9 (5.4)	11 (11.5)	53 (8.8)	8 (4.2)	21 (15.8)	81 (9.5)	20 (10.0)	47 (15.4)	190 (9.3)	37 (6.6)
	50 - <60	20 (26.3)	128 (21.6)	25 (15.3)	34 (35.4)	135 (22.2)	38 (20.0)	40 (30.0)	213 (24.8)	40 (20.1)	94 (30.8)	476 (23.0)	103 (18.6)
	60 - <70	22 (29.0)	185 (31.2)	47 (28.6)	35 (36.4)	177 (29.0)	61 (32.2)	35 (26.4)	247 (28.8)	60 (30.2)	92 (30.3)	609 (29.6)	168 (30.4)
	70 - <80	14 (18.4)	166 (28.0)	65 (39.6)	8 (8.4)	183 (30.0)	53 (27.8)	25 (18.8)	231 (26.8)	63 (31.5)	47 (15.4)	580 (28.3)	181 (32.8)
	≥80	3 (4.0)	50 (8.4)	17 (10.5)	6 (6.3)	51 (8.4)	26 (13.6)	7 (5.2)	64 (7.4)	13 (6.6)	16 (5.2)	165 (8.0)	56 (10.2)
	Total	**76 (100)**	**593 (100)**	**164 (100)**	**96 (100)**	**609 (100)**	**190 (100)**	**133 (100)**	**859 (100)**	**199 (100)**	**305 (100)**	**2,061(100)**	**553 (100)**

Table 2.4.6 Age-gender distribution of patients with ACS by smoking status, NCVD-ACS Registry, 2011-2013

Smoking — values shown as No. (%)

Gender	Age group	2011 Never	2011 Former (quit >30days)	2011 Current (any tobacco used within last 30 days)	2011 Not Available	2012 Never	2012 Former (quit >30days)	2012 Current (any tobacco used within last 30 days)	2012 Not Available	2013 Never	2013 Former (quit >30days)	2013 Current (any tobacco used within last 30 days)	2013 Not Available	2011-2013 Never	2011-2013 Former (quit >30days)	2011-2013 Current (any tobacco used within last 30 days)	2011-2013 Not Available
Male	20 - <30	5 (0.6)	3 (0.4)	33 (2.4)	0 (0)	9 (1.0)	3 (0.4)	28 (1.8)	0 (0)	11 (1.0)	2 (0.2)	37 (1.6)	1 (0.4)	25 (1.0)	8 (0.2)	98 (1.8)	1 (0.2)
	30 - <40	22 (3.0)	24 (3.0)	132 (9.3)	3 (5.7)	30 (3.4)	23 (2.5)	176 (10.6)	4 (4.2)	38 (3.4)	52 (4.4)	224 (10.0)	4 (2.0)	90 (3.2)	99 (3.4)	532 (10.0)	11 (3.2)
	40 - <50	107 (14.1)	103 (13.0)	432 (30.3)	4 (7.6)	148 (17.2)	131 (14.3)	425 (25.8)	11 (11.6)	163 (14.5)	154 (12.7)	547 (24.5)	25 (12.2)	418 (15.2)	388 (13.3)	1,404 (26.4)	40 (11.4)
	50 - <60	257 (34.0)	242 (30.3)	502 (35.0)	19 (36.6)	271 (31.4)	273 (29.7)	569 (34.6)	28 (29.4)	377 (33.6)	408 (33.7)	817 (36.7)	62 (30.2)	905 (33.0)	923 (31.7)	1,888 (35.6)	109 (31.0)
	60 - <70	204 (27.0)	248 (31.2)	227 (15.8)	16 (30.7)	241 (28.0)	294 (32.1)	325 (19.8)	27 (28.4)	323 (28.7)	348 (28.7)	447 (20.0)	56 (27.4)	768 (28.0)	890 (30.5)	999 (18.8)	99 (28.2)
	70 - <80	132 (17.3)	146 (18.3)	93 (6.4)	9 (17.4)	136 (15.8)	157 (17.2)	102 (6.2)	23 (24.2)	170 (15.2)	202 (16.7)	149 (6.6)	44 (21.4)	438 (16.0)	505 (17.3)	344 (6.4)	76 (21.5)
	≥80	31 (4.0)	31 (3.8)	12 (0.8)	1 (2.0)	28 (3.2)	34 (3.8)	21 (1.2)	2 (2.2)	40 (3.6)	43 (3.6)	15 (0.6)	13 (6.4)	99 (3.6)	108 (3.6)	48 (1.0)	16 (4.5)
	Total	**758 (100)**	**797 (100)**	**1,431 (100)**	**52 (100)**	**863 (100)**	**915 (100)**	**1,646 (100)**	**95 (100)**	**1,122 (100)**	**1,209 (100)**	**2,236 (100)**	**205 (100)**	**2,743 (100)**	**2,921 (100)**	**5,313 (100)**	**352 (100)**
Female	20 - <30	2 (0.2)	0 (0)	1 (2.6)	0 (0)	2 (0.2)	0 (0)	1 (3.0)	1 (3.6)	2 (0.2)	0 (0)	0 (0)	0 (0)	6 (0.2)	0 (0)	2 (1.6)	1 (1.0)
	30 - <40	7 (1.0)	1 (2.6)	1 (2.6)	0 (0)	12 (1.5)	1 (3.7)	1 (3.0)	1 (3.6)	26 (2.4)	3 (4.2)	1 (1.6)	0 (0)	45 (1.6)	5 (3.6)	3 (2.4)	1 (1.0)
	40 - <50	77 (10.0)	2 (5.2)	5 (13.2)	3 (16.6)	63 (7.6)	2 (7.3)	6 (18.2)	1 (3.6)	105 (10.0)	5 (6.8)	11 (18.7)	2 (4.2)	245 (9.3)	9 (6.5)	22 (17.0)	6 (6.4)
	50 - <60	163 (21.0)	5 (13.3)	13 (34.2)	3 (16.6)	192 (23.5)	9 (33.4)	8 (24.3)	4 (14.2)	262 (25.0)	19 (26.0)	13 (22.0)	13 (27.7)	617 (23.4)	33 (24.0)	34 (26.2)	20 (21.6)
	60 - <70	234 (30.2)	15 (39.4)	11 (29.0)	7 (38.8)	262 (31.8)	3 (11.1)	9 (27.3)	8 (28.6)	300 (28.6)	21 (28.8)	17 (28.8)	12 (25.6)	796 (30.0)	39 (28.2)	37 (28.3)	27 (29.0)
	70 - <80	228 (29.4)	13 (34.3)	6 (15.8)	4 (22.3)	220 (26.6)	9 (33.4)	6 (18.2)	9 (32.2)	279 (26.6)	19 (26.0)	12 (20.5)	18 (38.3)	727 (27.5)	41 (29.7)	24 (18.3)	31 (33.4)
	≥80	64 (8.2)	2 (5.2)	1 (2.6)	1 (5.7)	73 (8.8)	3 (11.1)	2 (6.0)	4 (14.2)	75 (7.2)	6 (8.2)	5 (8.4)	2 (4.2)	212 (8.0)	11 (8.0)	8 (6.2)	7 (7.6)
	Total	**775 (100)**	**38 (100)**	**38 (100)**	**18 (100)**	**824 (100)**	**27 (100)**	**33 (100)**	**28 (100)**	**1,049 (100)**	**73 (100)**	**59 (100)**	**47 (100)**	**2,648 (100)**	**138 (100)**	**130 (100)**	**93 (100)**

Table 2.5 Presence of cumulative risk factors, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
Total	4,047		4,589		6,127		14,763	
Presence of cumulative risk factors*	No.	%	No.	%	No.	%	No.	%
None	211	5.3	267	5.8	344	5.6	822	5.6
1 risk factor	772	19.0	951	20.8	1,377	22.4	3,100	21.0
2 risk factors	1,229	30.4	1,343	29.2	1,749	28.6	4,321	29.2
3 risk factors	1,143	28.2	1,208	26.4	1,521	24.8	3,872	26.2
>3 risk factors	692	17.1	820	17.8	1,136	18.6	2,648	18.0

***** *Risk factors are defined as presence of dyslipidaemia, hypertension, diabetes, family history of premature cardiovascular disease, smoking and obesity*

Table 2.6 Summary of type of cardiac presentation for patients with ACS, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
Total	4,047		4,589		6,127		14,763	
Acute coronary syndrome stratum	No.	%	No.	%	No.	%	No.	%
STEMI	2,055	50.8	2,386	52.0	3,061	50.0	7,502	50.8
NSTEMI	1,094	27.0	1,146	25.0	1,602	26.2	3,842	26.0
Unstable Angina (UA)	898	22.2	1,057	23.0	1,464	23.8	3,419	23.2

Note: Percentage is to the nearest decimal point

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
DEMOGRAPHICS												
Age, years												
N	2,055	1,094	898	2,386	1,146	1,057	3,061	1,602	1,464	7,502	3,842	3,419
Mean (SD)	56.3 (12.2)	61.2 (11.8)	60.8 (12.0)	56.5 (12.1)	60.6 (11.9)	60.9 (12.3)	56.0 (11.8)	60.7 (11.8)	60.7 (11.8)	56.2 (12.0)	60.8 (11.8)	60.8 (12.0)
Median (min, max)	55.6 (21.1, 96.9)	61.0 (25.3, 90.4)	60.8 (21.6, 98.4)	56.2 (20.3, 92.0)	60.9 (24.9, 95.3)	60.6 (22.1, 100.9)	55.8 (20.9, 97.6)	60.4 (20.0, 96.0)	60.6 (21.1, 101.9)	55.8 (20.3, 97.6)	60.7 (20.0, 96.0)	60.6 (21.1, 101.9)
IQR	16.8	17.8	17.0	16.7	16.3	16.7	15.4	16.1	16.8	16.1	16.7	17
Age group, No. (%)												
20 - <30	32 (1.6)	6 (0.6)	6 (0.6)	28 (1.2)	7 (0.6)	9 (0.8)	42 (1.4)	7 (0.4)	4 (0.2)	102 (1.4)	20 (0.6)	19 (0.6)
30 - <40	139 (6.7)	28 (2.6)	33 (3.7)	177 (7.4)	50 (4.4)	36 (3.4)	237 (7.8)	66 (4.3)	51 (3.5)	553 (7.4)	144 (3.8)	120 (3.5)
40 - <50	456 (22.2)	159 (14.6)	134 (15.0)	520 (21.8)	153 (13.4)	151 (14.3)	633 (20.6)	197 (12.2)	203 (13.8)	1,609 (21.4)	509 (13.2)	488 (14.2)
50 - <60	678 (33.0)	321 (29.3)	251 (28.0)	750 (31.4)	326 (28.4)	311 (29.5)	1,052 (34.4)	511 (31.8)	448 (30.6)	2,480 (33.0)	1,158 (30.2)	1,010 (29.5)
60 - <70	447 (21.7)	298 (27.2)	254 (28.2)	571 (24.0)	343 (30.0)	293 (27.8)	697 (22.8)	446 (27.8)	415 (28.5)	1,715 (22.8)	1,087 (28.2)	962 (28.2)
70 - <80	247 (12.0)	229 (21.0)	182 (20.3)	282 (11.8)	214 (18.6)	191 (18.0)	339 (11.0)	298 (18.7)	278 (19.0)	868 (11.6)	741 (19.2)	651 (19.0)
≥ 80	56 (2.8)	53 (4.7)	38 (4.2)	58 (2.4)	53 (4.6)	66 (6.2)	61 (2.0)	77 (4.8)	65 (4.4)	175 (2.4)	183 (4.8)	169 (5.0)
Gender, No. (%)												
Male	1,738 (84.6)	787 (72.0)	620 (69.0)	2,048 (85.8)	855 (74.6)	725 (68.6)	2,611 (85.2)	1,240 (77.4)	1,014 (69.2)	6,397 (85.2)	2,882 (75.0)	2,359 (69.0)
Female	317 (15.4)	307 (28.0)	278 (31.0)	338 (14.2)	291 (25.4)	332 (31.4)	450 (14.8)	362 (22.6)	450 (30.8)	1,105 (14.8)	960 (25.0)	1,060 (31.0)

Year	2011			2012			2013			2011-2013		
ACS Stratum	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Ethnic group, No. (%)												
Malay	1,140 (55.3)	480 (43.8)	371 (41.3)	1,387 (58.2)	492 (43.0)	413 (39.0)	1,791 (58.5)	754 (47.0)	631 (43.2)	4,318 (57.6)	1,726 (45.0)	1,415 (41.3)
Chinese	389 (19.0)	272 (24.8)	207 (23.0)	386 (16.2)	275 (24.0)	332 (31.4)	487 (16.0)	411 (25.5)	415 (28.3)	1,262 (16.8)	958 (25.0)	954 (28.0)
Indian	336 (16.4)	275 (25.2)	286 (31.7)	345 (14.4)	291 (25.5)	247 (23.5)	464 (15.2)	320 (20.0)	340 (23.2)	1,145 (15.3)	886 (23.0)	873 (25.5)
Orang Asli	2 (0.0)	0 (0)	0 (0)	1 (0.0)	0 (0)	0 (0)	4 (0.2)	1 (0.0)	0 (0)	7 (0.0)	1 (0.0)	0 (0)
Kadazan	20 (1.0)	10 (1.0)	3 (0.4)	25 (1.0)	7 (0.6)	5 (0.4)	39 (1.2)	15 (1.0)	11 (0.7)	84 (1.2)	32 (0.8)	19 (0.5)
Melanau	2 (0.0)	2 (0.2)	0 (0)	1 (0.0)	0 (0)	0 (0)	2 (0.0)	2 (0.2)	1 (0.0)	5 (0.0)	4 (0.2)	1 (0.0)
Murut	0 (0)	0 (0)	1 (0.2)	3 (0.0)	1 (0.0)	0 (0)	4 (0.2)	2 (0.2)	0 (0)	7 (0.0)	3 (0.1)	1 (0.0)
Bajau	23 (1.2)	6 (0.6)	1 (0.2)	27 (1.2)	5 (0.4)	3 (0.2)	33 (1.0)	12 (0.7)	3 (0.2)	83 (1.2)	23 (0.5)	7 (0.2)
Bidayuh	13 (0.6)	3 (0.2)	1 (0.2)	13 (0.6)	7 (0.6)	4 (0.4)	16 (0.6)	15 (1.0)	8 (0.6)	42 (0.6)	25 (0.6)	13 (0.4)
Iban	27 (1.4)	9 (0.8)	6 (0.6)	38 (1.6)	19 (1.6)	13 (1.3)	32 (1.0)	20 (1.2)	20 (1.4)	97 (1.2)	48 (1.2)	39 (1.1)
Other Malaysian	35 (1.7)	21 (2.0)	14 (1.6)	63 (2.6)	24 (2.0)	30 (2.8)	71 (2.4)	25 (1.6)	21 (1.4)	169 (2.3)	70 (1.9)	65 (2.0)
Foreigner	68 (3.4)	16 (1.4)	8 (0.8)	97 (4.0)	25 (2.3)	10 (1.0)	118 (3.7)	25 (1.6)	14 (1.0)	283 (3.8)	66 (1.8)	32 (1.0)
OTHER CORONARY RISK FACTORS												
Smoking, No. (%)												
Never	604 (30.2)	491 (46.8)	438 (51.2)	686 (29.6)	510 (46.4)	491 (48.6)	901 (30.0)	608 (38.8)	662 (46.6)	2,191 (29.9)	1,609 (43.4)	1,591 (48.4)
Former (quit >30 days)	361 (18.0)	243 (23.2)	231 (27.0)	432 (18.6)	241 (21.8)	269 (26.7)	460 (15.3)	443 (28.2)	379 (26.6)	1,253 (17.0)	927 (25.0)	879 (26.8)
Current (any tobacco use within last 30 days)	1,017 (50.8)	282 (27.0)	170 (19.8)	1,167 (50.2)	302 (27.4)	210 (20.8)	1,556 (51.7)	428 (27.4)	311 (21.8)	3,740 (51.0)	1,012 (27.2)	691 (21.0)
Unknown	22 (1.0)	31 (3.0)	17 (2.0)	36 (1.6)	48 (4.4)	39 (3.9)	93 (3.0)	88 (5.6)	71 (5.0)	151 (2.1)	167 (4.4)	127 (3.8)
Missing	51	47	42	65	45	48	51	35	41	167	127	131

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Family history of Premature CVD, No. (%)												
Yes	250 (13.7)	147 (15.0)	128 (15.2)	272 (12.8)	140 (13.2)	142 (14.1)	331 (12.0)	187 (12.2)	178 (13.0)	853 (12.7)	474 (13.2)	448 (14.0)
No	1,312 (72.0)	666 (67.8)	540 (64.6)	1,487 (69.8)	677 (64.2)	641 (64.0)	1,943 (70.8)	1,112 (72.4)	950 (69.2)	4,742 (70.7)	2,455 (68.8)	2,131 (66.3)
Unknown	262 (14.3)	170 (17.2)	169 (20.2)	372 (17.4)	238 (22.6)	220 (21.9)	473 (17.2)	236 (15.4)	244 (17.8)	1,107 (16.6)	644 (18.0)	633 (19.7)
Missing	231	111	61	255	91	54	314	67	92	800	269	207
ANTHROPOMETRICS												
Body Mass Index (BMI), kgm^{-2}												
N	734	326	247	928	384	378	1,067	575	531	2,729	1,285	1,156
Mean (SD)	25.9 (4.1)	25.4 (4.2)	26.3 (5.0)	25.9 (3.9)	25.9 (4.3)	25.8 (4.5)	26.4 (4.2)	26.4 (4.5)	26.1 (4.6)	26.1 (4.1)	26.0 (4.4)	26.0 (4.6)
Median (min, max)	25.6 (15.4, 44.8)	25.3 (15.4, 47.4)	25.5 (14.7, 49.8)	25.7 (15.6, 48.1)	25.7 (16.3, 43.5)	25.4 (16.7, 43.5)	26.2 (14.6, 44.1)	26.0 (15.0, 46.5)	25.8 (15.0, 47.9)	25.8 (14.6, 48.1)	25.7 (15.0, 47.4)	25.5 (14.7, 49.8)
IQR	4.6	5.1	5.9	5	5.4	5.8	5.5	5.7	5.6	5	5.5	5.8
Missing	1,321	768	651	1,458	762	679	1,994	1,027	933	4,773	2,557	2,263
BMI, kgm^{-2}, No. (%)												
<18.5	13 (1.8)	12 (3.6)	9 (3.7)	20 (2.2)	11 (2.8)	16 (4.2)	15 (1.4)	13 (2.2)	20 (3.8)	48 (1.8)	36 (2.8)	45 (3.8)
18.5 - 23	149 (20.2)	82 (25.2)	54 (21.8)	191 (20.6)	96 (25.0)	90 (23.8)	198 (18.6)	122 (21.2)	104 (19.6)	538 (19.7)	300 (23.4)	248 (21.5)
>23	572 (78.0)	232 (71.2)	184 (74.5)	717 (77.2)	277 (72.2)	272 (72.0)	854 (80.0)	440 (76.6)	407 (76.6)	2,143 (78.5)	949 (73.8)	863 (74.7)
Missing	1,321	768	651	1,458	762	679	1,994	1,027	933	4,773	2557	2263
Waist Hip Ratio (WHR)												
N	528	154	113	529	116	115	714	240	223	1771	510	451
Mean (SD)	1.0 (0.2)	1.0 (0.2)	1.0 (0.3)	1.0 (0.1)	1.0 (0.2)	0.9 (0.1)	1.0 (0.1)	1.0 (0.2)	1.0 (0.2)	1.0 (0.1)	1.0 (0.2)	1.0 (0.2)
Median (min, max)	1.0 (0.7, 2.5)	1.0 (0.8, 2.5)	1.0 (0.7, 2.2)	1.0 (0.7, 1.9)	1.0 (0.7, 2.0)	0.9 (0.8, 1.1)	1.0 (0.8, 2.9)	1.0 (0.7, 2.9)	1.0 (0.7, 2.4)	1.0 (0.7, 2.9)	1.0 (0.7, 2.9)	1.0 (0.7, 2.4)
IQR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Missing	1,527	940	785	1,857	1,030	942	2,347	1,362	1,241	5,731	3,332	2,968

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
WHR, No. (%)												
Men	462	118	82	474	92	73	637	184	169	1573	394	324
≤1.0	356 (77.0)	79 (67.0)	54 (65.8)	333 (70.2)	63 (68.4)	62 (85.0)	444 (69.8)	136 (74.0)	138 (81.6)	1,133 (72.0)	278 (70.6)	254 (78.4)
>1.0	106 (23.0)	39 (33.0)	28 (34.2)	141 (29.8)	29 (31.6)	11 (15.0)	193 (30.2)	84 (26.0)	31 (18.4)	440 (28.0)	116 (29.4)	70 (21.6)
Women	66	36	31	55	24	42	77	56	54	198	116	127
≤0.85	8 (12.2)	6 (16.6)	3 (9.6)	6 (11.0)	2 (8.4)	9 (21.4)	7 (9.0)	7 (12.5)	7 (13.0)	21 (10.6)	15 (13.0)	19 (15.0)
>0.85	58 (87.8)	30 (83.4)	28 (90.4)	49 (89.0)	22 (91.6)	33 (78.6)	70 (91.0)	49 (87.5)	47 (87.0)	177 (89.4)	101 (87.0)	108 (85.0)
Waist circumference, cm												
N	469	134	84	491	108	107	634	225	216	1594	467	407
Mean (SD)	92.9 (9.8)	92.9 (9.4)	96.5 (11.5)	92.5 (10.4)	93.2 (11.6)	92.2 (11.6)	92.7 (10.5)	92.7 (12.2)	91.5 (10.3)	92.7 (10.3)	92.9 (11.3)	92.7 (11.1)
Median (min, max)	93.0 (70.0, 129.0)	92.5 (74.0, 120.0)	96.0 (73.0, 129.0)	91.0 (70.0, 122.0)	93.5 (70.0, 120.0)	91.0 (70.0, 124.0)	92.0 (70.0, 125.0)	91.0 (70.0, 128.0)	90.0 (70.0, 130.0)	92.0 (70.0, 129.0)	92.0 (70.0, 128.0)	90.0 (70.0, 130.0)
IQR	13.0	12.5	15.5	14.0	16.5	17.0	14.0	16.0	13.5	13.0	15.0	15.0
Not available	1,244 (72.6)	768 (85.2)	675 (89.0)	1,455 (74.8)	836 (88.6)	795 (88.2)	1,988 (75.8)	1,014 (81.8)	1,006 (82.4)	4,687 (74.6)	2,618 (84.8)	2,476 (85.8)
Missing	342	192	139	440	202	155	439	363	242	1221	757	536
Waist circumference, cm, No. (%)												
Men	1,455	647	520	1,669	715	643	2,243	960	852	5,367	2,322	2,015
≤90	172 (11.8)	45 (7.0)	22 (4.2)	205 (12.3)	41 (5.8)	35 (5.4)	233 (10.4)	78 (8.2)	96 (11.3)	610 (11.4)	164 (7.0)	153 (7.6)
>90	242 (16.6)	61 (9.4)	37 (7.2)	234 (14.0)	46 (6.4)	38 (6.0)	334 (14.8)	93 (9.6)	67 (7.8)	810 (15.0)	200 (8.6)	142 (7.0)
Not available	1,041 (71.6)	541 (83.6)	461 (88.6)	1,230 (73.7)	628 (87.8)	570 (88.6)	1,676 (74.8)	789 (82.2)	689 (80.9)	3,947 (73.6)	1,958 (84.4)	1,720 (85.4)

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Women	258	255	239	277	229	259	379	279	370	914	763	868
≤80	8 (3.2)	6 (2.4)	1 (4.2)	9 (3.2)	4 (1.8)	10 (3.8)	10 (2.6)	14 (5.0)	9 (2.5)	27 (3.0)	24 (3.2)	20 (2.4)
>80	47 (18.2)	22 (8.6)	24 (10.0)	43 (15.6)	17 (7.4)	24 (9.3)	57 (15.0)	40 (14.4)	44 (11.8)	147 (16.0)	79 (10.3)	92 (10.6)
Not available	203 (78.6)	227 (89.0)	214 (89.6)	225 (81.2)	208 (90.8)	225 (86.9)	312 (82.4)	225 (80.6)	317 (85.7)	740 (81.0)	660 (86.5)	756 (87.0)
CO-MORBIDITY												
Dyslipidaemia, No. (%)												
Yes	587 (31.8)	469 (46.4)	403 (46.8)	585 (27.4)	455 (42.4)	498 (49.4)	755 (27.6)	628 (40.8)	720 (51.2)	1,927 (28.8)	1,552 (42.8)	1,621 (49.4)
No	965 (52.4)	443 (43.8)	377 (43.8)	1,210 (56.6)	508 (47.4)	447 (44.3)	1,559 (57.0)	818 (53.2)	593 (42.0)	3,734 (55.6)	1,769 (48.9)	1,417 (43.2)
Unknown	293 (15.8)	98 (9.8)	81 (9.4)	340 (16.0)	109 (10.2)	64 (6.3)	420 (15.4)	92 (6.0)	96 (6.8)	1,053 (15.6)	299 (8.3)	241 (7.4)
Missing	210	84	37	251	74	48	327	64	55	788	222	140
Hypertension, No. (%)												
Yes	1,061 (56.4)	782 (75.2)	704 (80.2)	1,209 (56.0)	806 (74.2)	782 (77.0)	1,518 (54.8)	1,054 (67.6)	1,058 (74.8)	3,788 (55.6)	2,642 (71.6)	2,544 (77.0)
No	710 (37.8)	236 (22.6)	160 (18.2)	807 (37.5)	246 (22.6)	206 (20.3)	1,065 (38.4)	473 (30.4)	319 (22.6)	2,582 (38.0)	955 (26.0)	685 (20.7)
Unknown	109 (5.8)	22 (2.2)	14 (1.6)	140 (6.5)	35 (3.2)	27 (2.7)	191 (6.8)	31 (2.0)	36 (2.6)	440 (6.4)	88 (2.4)	77 (2.3)
Missing	175	54	20	230	59	42	287	44	51	692	157	113
Diabetes, No. (%)												
Yes	713 (38.0)	558 (54.8)	471 (54.2)	844 (39.2)	598 (55.2)	532 (52.6)	1,111 (40.3)	774 (50.0)	683 (48.8)	2,668 (39.3)	1,930 (52.8)	1,686 (51.4)
No	1,027 (54.8)	430 (42.2)	364 (41.8)	1,138 (53.0)	439 (40.4)	446 (44.2)	1,413 (51.2)	727 (46.8)	654 (46.8)	3,578 (52.7)	1,596 (43.7)	1,464 (44.6)
Unknown	136 (7.2)	30 (3.0)	34 (4.0)	166 (7.8)	47 (4.4)	33 (3.2)	234 (8.5)	50 (3.2)	62 (4.4)	536 (8.0)	127 (3.5)	129 (4.0)
Missing	179	76	29	238	62	46	303	51	65	720	189	140

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Fasting blood glucose, mmol/L												
N	1,608	756	538	1,835	725	610	2360	973	868	5,803	2,454	2,016
Mean (SD)	8.7 (4.5)	7.9 (4.1)	7.2 (3.4)	8.6 (4.2)	8.2 (4.2)	7.2 (3.0)	8.8 (4.4)	8.3 (4.3)	7.3 (3.9)	8.7 (4.3)	8.1 (4.2)	7.3 (3.5)
Median (min, max)	7.2 (3.1, 49.0)	6.5 (3.0, 43.0)	6.0 (3.2, 38.0)	7.1 (3.3, 44.4)	6.8 (3.0, 35.6)	6.1 (3.0, 23.0)	7.3 (3.0, 41.7)	6.8 (3.2, 43.1)	5.9 (3.2, 49.9)	7.2 (3.0, 49.0)	6.7 (3.0, 43.1)	6.0 (3.0, 49.9)
IQR	4.2	3.7	2.9	3.9	4.2	2.8	4.2	4.0	2.7	4.1	4.0	2.8
Not Done	330 (17.0)	254 (25.2)	302 (36.0)	407 (18.2)	351 (32.6)	371 (37.8)	407 (14.8)	386 (28.4)	499 (36.6)	1,144 (16.4)	991 (28.8)	1,172 (36.8)
Missing	117	84	58	144	70	76	294	243	97	555	397	231
Myocardial infarction history, No. (%)												
Yes	226 (12.3)	273 (27.8)	306 (36.5)	268 (12.6)	289 (27.5)	316 (31.6)	311 (11.3)	298 (19.3)	313 (22.8)	805 (12.0)	860 (24.0)	935 (29.2)
No	1,470 (80.2)	620 (63.0)	467 (55.7)	1,654 (77.8)	662 (62.8)	587 (58.6)	2,205 (79.8)	1,108 (71.7)	882 (64.4)	5,329 (79.3)	2,390 (66.8)	1,936 (60.3)
Unknown	138 (7.5)	90 (9.2)	66 (7.8)	203 (9.6)	102 (9.7)	98 (9.8)	244 (8.9)	138 (9.0)	175 (12.8)	585 (8.7)	330 (9.2)	339 (10.5)
Missing	221	111	59	261	93	56	301	58	94	783	262	209
*Documented CAD, No. (%)												
Yes	137 (7.5)	219 (22.4)	272 (32.5)	157 (7.4)	294 (27.8)	393 (39.2)	257 (9.4)	536 (34.8)	587 (42.6)	551 (8.2)	1,049 (29.4)	1,252 (38.8)
No	1,420 (78.2)	616 (63.2)	448 (53.5)	1,633 (77.0)	631 (59.7)	503 (50.0)	2,186 (79.6)	905 (58.8)	669 (48.4)	5,239 (78.4)	2,152 (60.2)	1,620 (50.3)
Unknown	261 (14.3)	140 (14.4)	118 (14.0)	329 (15.6)	132 (12.5)	108 (10.8)	303 (11.0)	98 (6.4)	125 (9.0)	893 (13.4)	370 (10.4)	351 (10.9)
Missing	237	119	60	267	89	53	315	63	83	819	271	196
Chronic angina (onset more than 2 weeks ago), No. (%)												
Yes	95 (5.2)	141 (14.4)	177 (21.0)	106 (5.0)	117 (11.2)	177 (17.7)	149 (5.4)	186 (12.0)	195 (14.4)	350 (5.2)	444 (12.4)	549 (17.2)
No	1,605 (87.8)	770 (78.3)	606 (72.3)	1,839 (86.4)	857 (81.6)	749 (74.8)	2,413 (88.2)	1,271 (82.4)	1,059 (77.6)	5,857 (87.6)	2,898 (81.0)	2,414 (75.4)
Unknown	127 (7.0)	72 (7.3)	56 (6.7)	182 (8.6)	76 (7.2)	75 (7.5)	175 (6.4)	85 (5.6)	109 (8.0)	484 (7.2)	233 (6.6)	240 (7.4)
Missing	228	111	59	259	96	56	324	60	101	811	267	216

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
New onset angina (less than 2 weeks ago), No. (%)												
Yes	1,045 (56.8)	694 (68.6)	532 (62.6)	1,169 (54.8)	612 (58.0)	632 (63.2)	1,514 (54.8)	840 (54.2)	862 (62.2)	3,728 (55.4)	2,146 (59.3)	2,026 (62.6)
No	737 (40.0)	287 (28.3)	285 (33.6)	843 (39.6)	418 (39.7)	336 (33.6)	1,137 (41.0)	637 (41.2)	421 (30.3)	2,717 (40.3)	1,342 (37.2)	1,042 (32.2)
Unknown	58 (3.2)	32 (3.1)	32 (3.8)	119 (5.6)	24 (2.3)	32 (3.2)	116 (4.2)	71 (4.6)	105 (7.5)	293 (4.3)	127 (3.5)	169 (5.2)
Missing	215	81	49	255	92	57	294	54	76	764	227	182
Heart failure, No. (%)												
Yes	85 (4.6)	141 (14.4)	86 (10.3)	70 (3.3)	164 (15.6)	129 (12.8)	80 (3.0)	130 (8.4)	85 (6.2)	235 (3.6)	435 (12.2)	300 (9.4)
No	1,649 (90.6)	798 (81.4)	715 (85.7)	1,915 (89.8)	845 (80.0)	826 (82.4)	2,502 (91.4)	1,337 (86.6)	1,167 (85.6)	6,066 (90.6)	2,980 (83.2)	2,708 (84.6)
Unknown	87 (4.8)	42 (4.2)	33 (4.0)	146 (6.9)	46 (4.4)	48 (4.8)	154 (5.6)	78 (5.0)	112 (8.2)	387 (5.8)	166 (4.6)	193 (6.0)
Missing	234	113	64	255	91	54	325	57	100	814	261	218
Chronic lung disease, No. (%)												
Yes	46 (2.5)	42 (4.4)	41 (4.9)	44 (2.0)	37 (3.6)	39 (3.8)	52 (1.8)	63 (4.0)	61 (4.5)	142 (2.2)	142 (4.0)	141 (4.4)
No	1,672 (92.0)	892 (91.6)	754 (90.2)	1,942 (91.0)	969 (91.8)	917 (91.7)	2,536 (92.6)	1,397 (90.8)	1,196 (87.7)	6,150 (91.8)	3,258 (91.4)	2,867 (89.6)
Unknown	100 (5.5)	39 (4.0)	41 (4.9)	150 (7.0)	49 (4.6)	45 (4.5)	151 (5.6)	79 (5.2)	107 (7.8)	401 (6.0)	167 (4.6)	193 (6.0)
Missing	237	121	62	250	91	56	322	63	100	809	275	218
*Renal disease, No. (%)												
Yes	79 (4.4)	140 (14.2)	79 (9.4)	86 (4.0)	117 (11.0)	98 (9.8)	96 (3.6)	200 (13.0)	148 (10.8)	261 (3.8)	457 (12.8)	325 (10.2)
No	1,649 (90.2)	810 (82.2)	723 (86.0)	1,893 (89.0)	896 (84.9)	863 (86.0)	2,497 (91.0)	1,276 (82.8)	1,118 (81.8)	6,039 (90.2)	2,982 (83.2)	2,704 (84.1)
Unknown	100 (5.4)	35 (3.6)	39 (4.6)	149 (7.0)	43 (4.1)	43 (4.2)	149 (5.4)	66 (4.2)	102 (7.4)	398 (6.0)	144 (4.0)	184 (5.7)
Missing	227	109	57	258	90	53	319	60	96	804	259	206

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Cerebrovascular disease, No. (%)												
Yes	58 (3.2)	55 (5.6)	42 (5.0)	65 (3.0)	42 (4.0)	46 (4.6)	82 (3.0)	52 (3.4)	67 (5.0)	205 (3.0)	149 (4.2)	155 (4.8)
No	1,673 (92.2)	879 (90.2)	756 (90.6)	1,927 (90.4)	960 (91.4)	910 (91.0)	2,512 (91.8)	1,416 (91.8)	1,186 (87.2)	6,112 (91.5)	3,255 (91.2)	2,852 (89.3)
Unknown	85 (4.6)	41 (4.2)	36 (4.4)	139 (6.6)	48 (4.6)	45 (4.4)	143 (5.2)	73 (4.8)	106 (7.8)	367 (5.5)	162 (4.6)	187 (5.9)
Missing	239	119	64	255	96	56	324	61	105	818	276	225
Peripheral vascular disease, No. (%)												
Yes	12 (0.6)	16 (1.6)	12 (1.4)	4 (0.2)	16 (1.6)	10 (1.0)	4 (0.2)	11 (0.7)	19 (1.4)	20 (0.4)	43 (1.2)	41 (1.3)
No	1,695 (94.0)	904 (93.4)	779 (93.3)	1,976 (93.0)	984 (94.0)	939 (94.0)	2,576 (94.4)	1,442 (94.1)	1,231 (90.8)	6,247 (93.8)	3,330 (93.8)	2,949 (92.4)
Unknown	96 (5.4)	48 (5.0)	44 (5.3)	144 (6.8)	47 (4.4)	49 (5.0)	150 (5.4)	79 (5.2)	107 (7.8)	390 (5.8)	174 (5.0)	200 (6.3)
Missing	252	126	63	262	99	59	331	70	107	845	295	229
None of the above, No. (%)												
Yes	143 (7.0)	29 (2.6)	13 (1.4)	216 (9.0)	42 (3.6)	21 (2.0)	258 (8.4)	28 (1.8)	15 (1.0)	617 (8.2)	99 (2.6)	49 (1.4)
No	1,912 (93.0)	1,065 (97.4)	885 (98.6)	2,170 (91.0)	1,104 (96.4)	1,036 (98.0)	2,803 (91.6)	1,574 (98.2)	1,449 (99.0)	6,885 (91.8)	3,743 (97.4)	3,370 (98.6)
**Coronary artery disease, No. (%)												
Yes	1,215 (70.0)	861 (86.8)	752 (90.0)	1,368 (70.4)	794 (77.2)	857 (88.8)	1,766 (68.0)	1,207 (80.6)	1,197 (90.2)	4,349 (69.2)	2,862 (81.4)	2,806 (89.8)
No	522 (30.0)	131 (13.2)	83 (10.0)	575 (29.6)	235 (22.8)	109 (11.2)	833 (32.0)	290 (19.4)	129 (9.8)	1,930 (30.8)	656 (18.6)	321 (10.2)

* Definition is different in CRF version 2013
** Coronary artery disease is defined as ''Yes'' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)
Note: Percentage is to the nearest decimal point

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Table 2.8 Age-Gender distribution of patients with ACS by ACS stratum, NCVD-ACS Registry, 2011-2013

Gender	Age Group	2011 STEMI No. (%)	2011 NSTEMI No. (%)	2011 UA No. (%)	2012 STEMI No. (%)	2012 NSTEMI No. (%)	2012 UA No. (%)	2013 STEMI No. (%)	2013 NSTEMI No. (%)	2013 UA No. (%)	2011-2013 STEMI No. (%)	2011-2013 NSTEMI No. (%)	2011-2013 UA No. (%)
Male	20 - <30	30 (1.8)	6 (0.8)	5 (0.8)	27 (1.4)	6 (0.8)	7 (1.0)	42 (1.6)	6 (0.4)	3 (0.2)	99 (1.5)	18 (0.6)	15 (0.6)
	30 - <40	132 (7.6)	27 (3.4)	32 (5.1)	173 (8.4)	46 (5.4)	27 (3.8)	226 (8.6)	59 (4.9)	38 (3.8)	531 (8.4)	132 (4.6)	97 (4.2)
	40 - <50	413 (23.8)	137 (17.4)	110 (17.8)	484 (23.6)	138 (16.1)	122 (16.8)	577 (22.0)	182 (14.7)	144 (14.2)	1,474 (23.0)	457 (15.8)	376 (16.0)
	50 - <60	616 (35.4)	261 (33.2)	182 (29.3)	665 (32.4)	266 (31.1)	238 (32.8)	926 (35.5)	422 (34.0)	348 (34.4)	2,207 (34.5)	949 (33.0)	768 (32.6)
	60 - <70	348 (20.0)	210 (26.6)	161 (26.0)	477 (23.2)	246 (28.7)	187 (25.8)	579 (22.3)	336 (27.0)	283 (28.0)	1,404 (22.0)	792 (27.5)	631 (26.7)
	70 - <80	168 (9.6)	121 (15.4)	110 (17.8)	183 (9.0)	133 (15.5)	113 (15.6)	228 (8.8)	186 (15.0)	167 (16.4)	579 (9.0)	440 (15.3)	390 (16.6)
	>=80	31 (1.8)	25 (3.2)	20 (3.2)	39 (2.0)	20 (2.4)	31 (4.2)	33 (1.2)	49 (4.0)	31 (3.0)	103 (1.6)	94 (3.2)	82 (3.3)
	Total	**1,738 (100)**	**787 (100)**	**620 (100)**	**2,048 (100)**	**855 (100)**	**725 (100)**	**2,611 (100)**	**1,240 (100)**	**1,014 (100)**	**6,397 (100)**	**2,882 (100)**	**2,359 (100)**
Female	20 - <30	2 (0.6)	0 (0)	1 (0.4)	1 (0.2)	1 (0.4)	2 (0.6)	0 (0)	1 (0.2)	1 (0.2)	3 (0.2)	2 (0.2)	4 (0.4)
	30 - <40	7 (2.2)	1 (0.4)	1 (0.4)	4 (1.2)	4 (1.4)	9 (2.8)	11 (2.4)	7 (2.0)	13 (2.8)	22 (2.0)	12 (1.2)	23 (2.2)
	40 - <50	43 (13.6)	22 (7.2)	24 (8.6)	36 (10.6)	15 (5.2)	29 (8.7)	56 (12.5)	15 (4.2)	59 (13.2)	135 (12.2)	52 (5.4)	112 (10.6)
	50 - <60	62 (19.6)	60 (19.5)	69 (24.8)	85 (25.3)	60 (20.5)	73 (22.0)	126 (28.0)	89 (24.5)	100 (22.2)	273 (24.7)	209 (21.8)	242 (22.8)
	60 - <70	99 (31.2)	88 (28.5)	93 (33.5)	94 (27.8)	97 (33.4)	106 (32.0)	118 (26.3)	110 (30.4)	132 (29.4)	311 (28.2)	295 (30.8)	331 (31.2)
	70 - <80	79 (25.0)	108 (35.2)	72 (25.9)	99 (29.3)	81 (27.7)	78 (23.3)	111 (24.6)	112 (31.0)	111 (24.6)	289 (26.2)	301 (31.4)	261 (24.6)
	>=80	25 (7.8)	28 (9.2)	18 (6.4)	19 (5.6)	33 (11.4)	35 (10.6)	28 (6.2)	28 (7.7)	34 (7.6)	72 (6.5)	89 (9.2)	87 (8.2)
	Total	**317 (100)**	**307 (100)**	**278 (100)**	**338 (100)**	**291 (100)**	**332 (100)**	**450 (100)**	**362 (100)**	**450 (100)**	**1,105 (100)**	**960 (100)**	**1,060 (100)**

CHAPTER 3: CLINICAL PRESENTATIONS & INVESTIGATIONS

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Summary

1. The spectrum of ACS presentations in year 2011-2013 were almost similar compared to the registry in the year 2006-2010; commonest being STEMI (50.8% vs. 48.2%), followed by NSTEMI (26.0% vs. 29.4%) and unstable angina (23.2% vs. 22.4%).

2. The STEMI cohort had higher mean total cholesterol and LDL-C compared to those with NSTEMI/unstable angina.

3. Almost 70% of the STEMI and 41.4% of the NSTEMI/UA cohort were in the intermediate to high TIMI risk score group.

4. There was an increasing trend observed in STEMI patients presenting with Killip IV compared to past registry (13.4% vs. 6.0%).

5. Median pain to needle time was slightly better than the previous cohort (185 minutes vs. 240 minutes in the year 2006-2010).

This chapter presents the results of clinical presentation and investigations of patients who were notified and registered in the ACS Registry in the year 2011-2013. The outlines of discussion for this chapter are:
1) Epidemiology & Clinical Presentation
2) Diagnosis
3) Pre-Morbid Risk Factors: Diabetes, Dyslipidaemia and Hypertension
4) Timeliness to Treatment
5) Discussion

Epidemiology & Clinical Presentation
A total of 14,763 patients were notified and registered in the NCVD-ACS Registry in the year 2011-2013. Approximately half of the entire ACS cohort for the year 2011-2013 presented with STEMI (50.8%), followed by NSTEMI (26.0%) and unstable angina (23.2%).

Majority of the patients were male (78.8%), while females accounted for 21.2%. As observed in the past registry for the year 2006-2010, more male patients had STEMI compared to female patients (55.0% vs. 35.3%). However, compared to male patients, female patients had relatively higher percentage for NSTEMI (30.7% vs. 24.8%) and unstable angina (34.0% vs. 20.3%). [Table 3.3]

Female patients presented with higher SBP (median 140 mmHg vs. 133 mmHg), pulse pressure (median 61 mmHg vs. 52 mmHg), heart rate (median 84 per min vs. 80 per min) and HbA1c (median 7.5 mmol/L vs. 6.5 mmol/L). Meanwhile, male patients had higher LDL-C (median 3.2 mmol/L vs. 3.0 mmol/L), poorer left ventricular ejection fraction (median 46% vs. 50%) with higher percentage of ECG changes involving anterior, inferior, true posterior, and right ventricular leads compared to female patient who had higher percentage involving lateral leads. Female patients had longer pain to needle time (median 227 min vs. 180 min) and door to needle time (median 50 min vs. 42 min). [Table 3.3]

Younger patients (20-<40 year old) had the highest percentage with STEMI (68.3%) followed by middle-age (56.4%) and elderly (42.2%). More than half (57.8%) of the elderly group presented with NSTEMI and unstable angina. Elderly patients presented with higher systolic blood pressure (median 137 mmHg vs. 135 mmHg vs.129 mmHg) and wider pulse pressure (59 mmHg vs. 51 mmHg vs. 48 mmHg, respectively). The young and

middle-age groups tend to have higher median total cholesterol, LDL-C and triglyceride, while the middle-age group had higher HbA1c level (median 6.9 mmol/L). Younger patients usually present with Killip class I, whereas more elderly patient presented with higher Killip class. Over the 3-year period, there had been a progressive increase in percentage of patients presenting with Killip class III-IV across all age group (5.0 vs. 8.2, 10.0 vs.12.0 and 11.4 vs. 15.8 for young, middle-age and elderly cohort, respectively). [Table 3.2]

Majority of the patients in the STEMI cohort presented with Killip class I (55.4%), while the remainders presented with class II (18.3%), III (4.5%) and IV (13.4%). There was a drastic increase in the percentage of STEMI patients presenting with Killip IV compared to the past registry (2006-2010), from 6.0% to 13.4%. [Table 3.1]

As for TIMI risk score, almost 70% of the STEMI cohort had intermediate (score of 3-4) to high score (score of >/= to 5). There was slight increase in the high TIMI risk score group from 35% (year 2006-2010) to 39.4% (year 2011-2013). [Table 3.1]

Diagnosis
Majority of patients with STEMI presented with anterior infarct (53.4%) followed by inferior (46.2%), lateral (19.6%), true posterior (7.6%) and right ventricle (6%) infarct. These trends were observed across gender and all age groups. [Table 3.1]

The median percentage of left ventricular ejection fraction (LVEF) were lower in STEMI group (45.0%) compared to NSTEMI (48.0%), and unstable angina (54.2%). There were no obvious difference seen according to gender, age, and pre-morbid conditions. [Table 3.1]

Pre-Morbid Risk Factors
Diabetes Mellitus
About 43% of the patients had diabetes mellitus and this has remained the same across the 3-year period. The highest incidence were seen in STEMI (42.4%) followed by NSTEMI (30.8%) and unstable angina (26.8%). ACS patients with diabetes mellitus had higher SBP (median 138 mmHg vs. 133 mmHg), wider pulse pressure (median 57 mmHg vs. 52 mmHg), higher heart rate (median 85/min vs. 79/min), HbA1c (median 8.2 mmol/L vs. 5.8 mmol/L), higher Killip class III & IV at presentation (15.0% vs. 10.8%). There was no difference in lipid profile between diabetic and non-diabetic patients. [Table 3.4]

STEMI diabetic patients took longer time to treatment compared to non diabetic patients (median pain to needle time of 210 mins vs. 170 mins). [Table 3.4]

Hypertension
Over the 3-year period, there seemed to be a decreasing trend in percentage of ACS patients with hypertension (67.0 %, 65.6% and 63.2%, respectively) [Table 2.1]. More patients with STEMI had hypertension followed by NSTEMI and UA (42.2%, 29.4% and 28.4%, respectively). Hypertensive patient had wider pulse pressure (median 57 mmHg vs. 49 mmHg), higher heart rate at presentation (median 82/min vs. 80/min), higher Killip class III and IV (13.8% vs. 11.1%) and higher HbA1c (median 7.2 mmol/L vs. 6.4 mmol/L). [Table 3.5]

Dyslipidaemia
Dyslipidaemia was higher in STEMI (36.0%) as compared to unstable angina (34.2%) and NSTEMI (29.8%). Patients with dyslipidaemia had higher SBP (median 139 mmHg vs. 135 mmHg), wider pulse pressure (median 56 mmHg vs. 53 mmHg) and higher HbA1C (median 7.0 mmol/L vs. 6.9 mmol/L). [Table 3.6]

Timeliness to Treatment

Compared to the past registry, patients tended to present one hour earlier with median pain to needle time of three hours (185 minutes) vs. four hours (240 minutes) in the year 2006-2010. [Table 3.1]

Discussion

The findings may not reflect the level of care and management of ACS in Malaysia, as majority of the notifications were obtained from the coronary care units (CCUs) in the tertiary centres and hospitals, with cardiac care units. This may explain higher percentage of STEMI compared to NSTEMI/UA.

NSTEMI ACS patients may be under diagnosed as newer bio-markers (Troponin T and Troponin I) were not available in some centres. There was a slight improvement in the pain to needle time.

Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	2,055	1,094	898	2,386	1,146	1,057	3,061	1,602	1,464	7,502	3,842	3,419
Systolic blood pressure, mmHg												
N	1,877	1,031	877	2,292	1,089	988	2,992	1,421	1,407	7,161	3,541	3,272
Mean (SD)	133.9 (28.6)	139.0 (28.2)	144.4 (26.3)	131.6 (29.2)	140.5 (31.0)	143.7 (26.2)	132.0 (29.4)	140.0 (29.9)	145.4 (27.7)	132.4 (29.1)	139.9 (29.7)	144.6 (26.9)
Median (min, max)	132.0 (50.0, 250.0)	137.0 (59.0, 270.0)	142.0 (85.0, 267.0)	130.0 (53.0, 261.0)	138.0 (56.0, 270.0)	141.0 (54.0, 240.0)	130.0 (52.0, 259.0)	138.0 (56.0, 264.0)	143.0 (63.0, 268.0)	130.0 (50.0, 261.0)	137.0 (56.0, 270.0)	142.0 (54.0, 268.0)
IQR	37.0	36.0	36.0	37.0	39.0	34.0	36.0	39.0	35.0	37.0	38.0	35.0
Missing	178	63	21	94	57	69	69	181	57	341	301	147
Diastolic blood pressure, mmHg												
N	1,872	1,031	877	2,285	1,081	983	2,990	1,419	1,405	7,147	3,531	3,265
Mean (SD)	80.6 (18.7)	80.4 (17.3)	81.8 (16.0)	79.3 (19.1)	81.1 (18.2)	81.2 (16.2)	79.8 (19.2)	81.4 (18.5)	81.9 (16.6)	79.8 (19.0)	81.0 (18.1)	81.6 (16.3)
Median (min, max)	80.0 (11.0, 166.0)	80.0 (10.0, 170.0)	81.0 (31.0, 165.0)	79.0 (21.0, 170.0)	80.0 (11.0, 158.0)	80.0 (11.0, 162.0)	79.0 (10.0, 170.0)	80.0 (34.0, 160.0)	80.0 (16.0, 170.0)	79.0 (10.0, 170.0)	80.0 (10.0, 170.0)	80.0 (11.0, 170.0)
IQR	24.0	21.0	20.0	23.0	23.0	19.0	23.0	23.0	20.0	24.0	23.0	20.0
Missing	183	63	21	101	65	74	71	183	59	355	311	154
Pulse pressure, mmHg												
N	1,869	1,029	874	2,279	1,080	982	2,979	1,418	1,403	7,127	3,527	3,259
Mean (SD)	53.4 (18.8)	58.5 (20.4)	62.9 (20.7)	52.4 (18.4)	59.2 (22.2)	62.5 (21.3)	52.4 (18.6)	58.7 (21.1)	63.6 (21.2)	52.6 (18.6)	58.8 (21.3)	63.1 (21.1)
Median (min, max)	51.0 (1.0, 149.0)	56.0 (11.0, 160.0)	60.0 (12.0, 158.0)	50.0 (3.0, 178.0)	55.0 (15.0, 198.0)	60.0 (5.0, 167.0)	50.0 (1.0, 140.0)	56.0 (1.0, 147.0)	61.0 (16.0, 169.0)	50.0 (1.0, 178.0)	55.0 (1.0, 198.0)	60.0 (5.0, 169.0)
IQR	23.0	26.0	27.0	22.0	29.0	26.0	22.0	27.0	27.0	23.0	27.0	27.0
Missing	186	65	24	107	66	75	82	184	61	375	315	160

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	2,055	1,094	898	2,386	1,146	1,057	3,061	1,602	1,464	7,502	3,842	3,419
Heart rate at presentation, beats/min												
N	1,877	1,028	875	2,272	1,078	984	2,964	1,409	1,403	7,113	3,515	3,262
Mean (SD)	83.2 (20.6)	84.7 (20.6)	80.8 (19.8)	83.3 (21.8)	86.3 (22.1)	79.9 (18.2)	84.0 (22.5)	86.0 (21.2)	80.5 (18.1)	83.6 (21.8)	85.7 (21.3)	80.4 (18.6)
Median (min, max)	82.0 (25.0, 166.0)	83.0 (30.0, 194.0)	79.0 (36.0, 188.0)	81.0 (20.0, 200.0)	83.0 (28.0, 198.0)	78.0 (40.0, 185.0)	81.0 (30.0, 198.0)	84.0 (30.0, 197.0)	79.0 (35.0, 195.0)	81.0 (20.0, 200.0)	83.0 (28.0, 198.0)	78.0 (35.0, 195.0)
IQR	28.0	27.0	25.0	28.0	28.0	25.0	30.0	27.0	22.0	29.0	28.0	23.0
Missing	178	66	23	114	68	73	97	193	61	389	327	157
Episodes of angina in past 24 hours, No. (%)												
0-2	801 (44.8)	335 (33.8)	289 (34.4)	1,111 (50.4)	370 (35.8)	403 (40.6)	1,318 (46.2)	531 (40.6)	623 (49.0)	3,230 (47.2)	1,236 (37.0)	1,315 (42.4)
>2	50 (2.8)	34 (3.4)	51 (6.0)	60 (2.8)	18 (1.8)	52 (5.2)	54 (1.8)	40 (3.0)	73 (5.8)	164 (2.4)	92 (2.8)	176 (5.6)
Not Available	937 (52.4)	623 (62.8)	500 (59.6)	1,031 (46.8)	645 (62.4)	540 (54.2)	1,485 (52.0)	738 (56.4)	573 (45.2)	3,453 (50.4)	2,006 (60.2)	1,613 (52.0)
Missing	267	102	58	184	113	62	204	293	195	655	508	315
Killip classification code, No. (%)												
I	1,049 (54.8)	372 (45.7)	351 (49.8)	1,140 (51.2)	360 (37.4)	330 (39.4)	1,662 (59.3)	834 (68.7)	586 (79.2)	3,851 (55.4)	1,566 (52.5)	1,267 (55.6)
II	340 (17.8)	120 (14.7)	66 (9.4)	402 (18.0)	156 (16.2)	101 (12.0)	530 (18.8)	191 (15.7)	94 (12.7)	1,272 (18.3)	467 (15.6)	261 (11.4)
III	91 (4.9)	28 (3.4)	7 (1.0)	99 (4.5)	39 (4.0)	11 (1.4)	124 (4.4)	84 (7.0)	26 (3.5)	314 (4.5)	151 (5.0)	44 (2.0)
IV	181 (9.5)	40 (5.0)	5 (0.8)	292 (13.3)	50 (5.2)	12 (1.4)	454 (16.3)	73 (6.0)	12 (1.6)	927 (13.4)	163 (5.5)	29 (1.2)
Not stated/ inadequately described	250 (13.0)	254 (31.2)	275 (39.0)	291 (13.0)	357 (37.2)	384 (45.8)	36 (1.2)	31 (2.6)	22 (3.0)	577 (8.4)	642 (21.4)	681 (29.8)
Not Available	23	33	34	17	23	87	226	380	718	266	436	839
Missing	121	247	160	145	161	132	29	9	6	295	417	298

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	2,055	1,094	898	2,386	1,146	1,057	3,061	1,602	1,464	7,502	3,842	3,419
Total cholesterol, mmol/L												
N	1,668	808	577	1,882	726	631	2,372	1,023	921	5,922	2,557	2,129
Mean (SD)	5.3 (1.4)	5.0 (1.6)	4.8 (1.3)	5.4 (1.5)	5.0 (1.5)	4.8 (1.4)	5.3 (1.4)	4.9 (1.4)	4.7 (1.3)	5.4 (1.4)	5.0 (1.5)	4.8 (1.3)
Median (min, max)	5.2 (2.0, 13.7)	4.8 (2.0, 17.0)	4.6 (2.0, 11.0)	5.3 (2.0, 14.0)	4.8 (2.0, 12.5)	4.5 (2.0, 12.3)	5.3 (2.1, 14.5)	4.7 (2.0, 14.1)	4.6 (2.0, 16.9)	5.3 (2.0, 14.5)	4.8 (2.0, 17.0)	4.6 (2.0, 16.9)
IQR	1.7	1.8	1.7	1.9	2.0	1.8	1.7	1.8	1.7	1.8	1.9	1.7
Not Done	299 (15.2)	225 (21.8)	274 (32.2)	372 (16.6)	357 (33.0)	364 (36.6)	382 (13.8)	349 (25.4)	450 (32.8)	1,053 (15.0)	931 (26.6)	1,088 (33.8)
Missing	88	61	47	132	63	62	307	230	93	527	354	202
HDL–C, mmol/L												
N	1,588	796	562	1,787	712	625	2,293	1,012	904	5,668	2,520	2,091
Mean (SD)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.4)	1.1 (0.3)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)
Median (min, max)	1.1 (0.5, 4.9)	1.0 (0.5, 4.6)	1.1 (0.5, 4.0)	1.0 (0.5, 3.9)	1.0 (0.5, 4.4)	1.0 (0.5, 3.9)	1.0 (0.5, 4.6)	1.0 (0.5, 4.6)	1.0 (0.5, 4.5)	1.0 (0.5, 4.9)	1.0 (0.5, 4.6)	1.0 (0.5, 4.5)
IQR	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Not Done	365 (18.6)	229 (22.4)	272 (32.6)	428 (19.4)	360 (33.6)	358 (36.4)	453 (16.4)	358 (26.2)	461 (33.8)	1,246 (18.0)	947 (27.4)	1,091 (34.2)
Missing	102	69	64	171	74	74	315	232	99	588	375	237
LDL–C, mmol/L												
N	1,604	813	579	1,822	729	627	2289	995	867	5,715	2,537	2,073
Mean (SD)	3.5 (1.3)	3.2 (1.4)	2.9 (1.1)	3.6 (1.4)	3.2 (1.3)	2.9 (1.2)	3.5 (1.2)	3.0 (1.2)	2.9 (1.1)	3.5 (1.3)	3.1 (1.3)	2.9 (1.2)
Median (min, max)	3.3 (0.5, 12.0)	3.0 (0.6, 10.9)	2.7 (0.5, 9.1)	3.5 (0.6, 12.2)	3.0 (0.6, 9.4)	2.7 (0.6, 9.2)	3.4 (0.5, 12.3)	2.9 (0.5, 10.2)	2.7 (0.5, 9.5)	3.4 (0.5, 12.3)	2.9 (0.5, 10.9)	2.7 (0.5, 9.5)
IQR	1.6	1.8	1.4	1.8	1.7	1.4	1.6	1.7	1.5	1.7	1.7	1.4
Not Done	366 (18.6)	230 (22.0)	272 (32.0)	435 (19.2)	364 (33.4)	366 (36.8)	480 (17.4)	380 (27.6)	498 (36.4)	1,281 (18.4)	974 (27.8)	1,136 (35.4)
Missing	85	51	47	129	53	64	292	227	99	506	331	210

Year	2011			2012			2013			2011-2013		
ACS Stratum	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Triglycerides, mmol/L												
N	1671	804	578	1877	732	629	2353	999	886	5,901	2,535	2,093
Mean (SD)	1.7 (1.1)	1.7 (1.0)	1.7 (1.0)	1.7 (1.1)	1.7 (1.1)	1.8 (1.1)	1.8 (1.1)	1.7 (1.1)	1.8 (1.2)	1.7 (1.1)	1.7 (1.1)	1.7 (1.1)
Median (min, max)	1.4 (0.5, 15.0)	1.4 (0.5, 11.8)	1.5 (0.5, 8.6)	1.5 (0.5, 13.0)	1.4 (0.5, 13.9)	1.5 (0.5, 13.1)	1.5 (0.5, 15.0)	1.4 (0.5, 13.1)	1.4 (0.5, 14.6)	1.5 (0.5, 15.0)	1.4 (0.5, 13.9)	1.5 (0.5, 14.6)
IQR	0.9	0.9	0.9	0.9	1.0	1.0	1.0	0.9	1.0	0.9	1.0	1.0
Not Done	302 (15.4)	226 (22.0)	269 (31.8)	372 (16.6)	357 (32.8)	361 (36.4)	405 (14.6)	368 (27.0)	476 (35.0)	1,079 (15.4)	951 (27.2)	1,106 (34.6)
Missing	82	64	51	137	57	67	303	235	102	522	356	220
*HbA1c, mmol/L												
N							560	260	189	560	260	189
Mean (SD)							7.6 (2.8)	7.6 (2.1)	7.7 (2.8)	7.6 (2.8)	7.6 (2.1)	7.7 (2.8)
Median (min, max)							6.6 (4.2, 32.0)	7.2 (4.2, 16.5)	6.5 (4.8, 29.0)	6.6 (4.2, 32.0)	7.2 (4.2, 16.5)	6.5 (4.8, 29.0)
IQR							3.1	2.6	2.8	3.1	2.6	2.8
Not Done							1,445 (72.0)	807 (75.6)	970 (83.6)	1,445 (72.0)	807 (75.6)	970 (83.6)
Missing							1056	535	305	1056	535	305
Left ventricular ejection fraction, %												
N	1,173	518	258	1,376	502	271	1,592	647	378	4,141	1,667	907
Mean (SD)	45.2 (11.9)	46.7 (15.6)	50.1 (16.4)	45.9 (12.0)	46.8 (13.6)	49.6 (15.5)	46.2 (11.7)	46.4 (13.6)	52.0 (14.1)	45.8 (11.9)	46.6 (14.3)	50.7 (15.2)
Median (min, max)	45.0 (6.3, 88.0)	48.0 (6.4, 83.0)	52.0 (10.0, 84.0)	45.0 (7.2, 85.0)	48.0 (14.3, 85.0)	50.0 (5.3, 81.0)	45.0 (6.6, 87.0)	48.0 (10.0, 89.0)	55.0 (6.8, 83.0)	45.0 (6.3, 88.0)	48.0 (6.4, 89.0)	54.2 (5.3, 84.0)
IQR	14.0	25.0	26.0	17.0	22.0	22.0	14.0	18.0	17.0	16.0	22.0	22.0
Not Done	648 (35.6)	387 (42.8)	505 (66.2)	688 (33.4)	505 (50.2)	695 (72.0)	1,017 (39.0)	603 (48.2)	887 (70.2)	2,353 (36.2)	1,495 (47.2)	2,087 (69.8)
Missing	234	189	135	322	139	91	452	352	199	1008	680	425

Year	2011			2012			2013			2011-2013		
ACS Stratum	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**	**STEMI**	**NSTEMI**	**UA**
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
ECG, No. (%)												
Inferior leads	915 (44.6)	264 (24.2)	142 (15.8)	1,083 (45.4)	250 (21.8)	183 (17.4)	1,473 (48.2)	373 (23.2)	253 (17.2)	3,471 (46.2)	887 (23.0)	578 (17.0)
Anterior leads	1,101 (53.6)	350 (32.0)	237 (26.4)	1,292 (54.2)	376 (32.8)	288 (27.2)	1,618 (52.8)	501 (31.2)	420 (28.6)	4,011 (53.4)	1,227 (32.0)	945 (27.6)
Lateral leads	413 (20.0)	396 (36.2)	220 (24.4)	456 (19.2)	388 (33.8)	288 (27.2)	602 (19.6)	535 (33.4)	476 (32.6)	1,471 (19.6)	1,319 (34.4)	984 (28.8)
True posterior	170 (8.2)	22 (2.0)	12 (1.4)	159 (6.6)	12 (1.0)	13 (1.2)	235 (7.6)	17 (1.0)	17 (1.2)	564 (7.6)	51 (1.4)	42 (1.2)
Right ventricle	108 (5.2)	4 (0.4)	1 (0.2)	129 (5.4)	4 (0.4)	2 (0.2)	211 (6.8)	8 (0.4)	1 (0.0)	448 (6.0)	16 (0.4)	4 (0.2)
None	22 (1.0)	146 (13.4)	273 (30.4)	18 (0.8)	173 (15.0)	287 (27.2)	22 (0.8)	434 (27.0)	443 (30.2)	62 (0.8)	753 (19.6)	1,003 (29.4)
Not stated/ inadequately described	76 (3.6)	105 (9.6)	118 (13.2)	24 (1.0)	107 (9.4)	117 (11.0)	33 (1.0)	99 (6.2)	148 (10.2)	133 (1.8)	311 (8.0)	383 (11.2)
Total number of STEMI patients who were given fibrinolytic therapy at this centre	1,131			1,109			1,477			3,717		
Pain to needle time, min (** symptom to treatment)												
N	809			744			1,062			2,615		
Mean (SD)	219.4 (175.8)			265.0 (215.9)			256.4 (210.4)			247.4 (202.8)		
Median (min, max)	160.0 (10.0, 1,315.0)			210.0 (4.0, 1,439.0)			195.0 (10.0, 1,375.0)			185.0 (4.0, 1,439.0)		
IQR	170.0			200.5			185.0			180.0		
Missing	322			365			415			1,102		

Definition is different in CRF version 2013
** Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
ACS Stratum	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	**244**	**1,999**	**1,804**	**307**	**2,211**	**2,071**	**407**	**3,044**	**2,676**	**958**	**7,254**	**6,551**
ACS stratum, No. (%)												
STEMI	171 (70.0)	1,134 (56.8)	750 (41.6)	205 (66.8)	1,270 (57.5)	911 (44.0)	279 (68.5)	1,685 (55.4)	1,097 (41.0)	655 (68.3)	4,089 (56.4)	2,758 (42.2)
NSTEMI	34 (14.0)	480 (24.0)	580 (32.2)	57 (18.6)	479 (21.7)	610 (29.4)	73 (18.0)	708 (23.2)	821 (30.6)	164 (17.2)	1,667 (23.0)	2,011 (30.6)
UA	39 (16.0)	385 (19.2)	474 (26.2)	45 (14.6)	462 (20.8)	550 (26.6)	55 (13.5)	651 (21.4)	758 (28.4)	139 (14.5)	1,498 (20.6)	1,782 (27.2)
Systolic blood pressure, mmHg												
N	221	1,872	1,692	287	2,116	1,966	393	2,895	2,532	901	6,883	6,190
Mean (SD)	129.8 (23.7)	136.5 (27.2)	140.0 (29.7)	133.8 (27.2)	135.2 (27.6)	138.4 (31.6)	130.7 (25.0)	135.9 (28.6)	139.7 (31.3)	131.5 (25.5)	135.9 (27.9)	139.4 (31.0)
Median (min, max)	127.0 (72.0, 196.0)	134.0 (50.0, 270.0)	139.0 (52.0, 267.0)	131.0 (77.0, 240.0)	133.0 (53.0, 258.0)	136.0 (58.0, 270.0)	130.0 (70.0, 253.0)	134.0 (54.0, 268.0)	137.0 (52.0, 264.0)	129.0 (70.0, 253.0)	134.0 (50.0, 270.0)	137.0 (52.0, 270.0)
IQR	32.0	35.5	38.0	35.0	34.0	39.0	31.0	35.0	40.0	33.0	35.0	39.0
Missing	23	127	112	20	95	105	14	149	144	57	371	361
Diastolic blood pressure, mmHg												
N	220	1,869	1,691	284	2,105	1,960	392	2,895	2,527	896	6,869	6,178
Mean (SD)	80.2 (17.1)	82.9 (17.5)	78.6 (17.8)	81.8 (19.0)	82.0 (18.2)	78.0 (18.0)	81.4 (18.1)	82.5 (18.3)	78.5 (18.4)	81.2 (18.1)	82.5 (18.1)	78.3 (18.1)
Median (min, max)	77.0 (47.0, 166.0)	82.0 (25.0, 170.0)	78.0 (10.0, 165.0)	80.0 (37.0, 145.0)	81.0 (11.0, 170.0)	77.0 (17.0, 162.0)	80.0 (38.0, 168.0)	82.0 (10.0, 170.0)	77.0 (16.0, 170.0)	80.0 (37.0, 168.0)	81.0 (10.0, 170.0)	77.0 (10.0, 170.0)
IQR	22.5	22.0	24.0	24.5	22.0	23.0	21.5	23.0	23.0	23.0	23.0	23.0
Missing	24	130	113	23	106	111	15	149	149	62	385	373
Pulse pressure, mmHg												
N	219	1,865	1,688	284	2,101	1,956	392	2,885	2,523	895	6,851	6,167
Mean (SD)	50.0 (15.6)	53.8 (17.7)	61.4 (22.0)	51.9 (19.9)	53.2 (18.1)	60.4 (22.3)	49.4 (15.5)	53.6 (18.5)	61.2 (22.2)	50.3 (17.0)	53.5 (18.2)	61.0 (22.2)
Median (min, max)	48.0 (5.0, 97.0)	52.0 (4.0, 147.0)	59.0 (1.0, 160.0)	49.0 (5.0, 178.0)	50.0 (3.0, 198.0)	58.0 (8.0, 167.0)	48.0 (1.0, 121.0)	51.0 (5.0, 147.0)	59.0 (1.0, 169.0)	48.0 (1.0, 178.0)	51.0 (3.0, 198.0)	59.0 (1.0, 169.0)
IQR	20.0	23.0	29.0	20.5	22.0	30.0	17.0	24.0	30.0	19.0	23.0	29.0
Missing	25	134	116	23	110	115	15	159	153	63	403	384

Year	2011			2012			2013			2011-2013		
ACS Stratum	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	**244**	**1,999**	**1,804**	**307**	**2,211**	**2,071**	**407**	**3,044**	**2,676**	**958**	**7,254**	**6,551**
Heart rate at presentation, beats/min												
N	219	1861	1700	285	2100	1949	388	2871	2517	892	6832	6166
Mean (SD)	82.4 (18.4)	83.0 (19.7)	83.1 (21.5)	84.3 (19.7)	82.8 (20.6)	83.7 (22.1)	84.7 (18.4)	83.6 (20.6)	83.5 (22.4)	84.0 (18.8)	83.2 (20.3)	83.5 (22.1)
Median (min, max)	80.0 (44.0, 135.0)	81.0 (30.0, 188.0)	81.0 (25.0, 194.0)	82.0 (20.0, 162.0)	80.0 (30.0, 200.0)	82.0 (28.0, 193.0)	84.0 (40.0, 158.0)	81.0 (30.0, 198.0)	81.0 (30.0, 195.0)	82.0 (20.0, 162.0)	81.0 (30.0, 200.0)	81.0 (25.0, 195.0)
IQR	24.0	24.0	28.0	27.0	25.0	31.0	25.0	27.0	28.0	26.0	26.0	28.0
Missing	25	138	104	22	111	122	19	173	159	66	422	385
Episodes of angina in past 24 hours, No. (%)												
0-2	96 (45.0)	713 (40.4)	616 (37.6)	136 (47.8)	965 (47.0)	783 (41.2)	168 (46.4)	1,264 (47.2)	1,040 (43.5)	400 (46.5)	2,942 (45.3)	2,439 (41.2)
>2	8 (3.8)	71 (4.0)	56 (3.4)	7 (2.5)	67 (3.3)	56 (3.0)	10 (2.8)	74 (2.8)	83 (3.5)	25 (3.0)	212 (3.3)	195 (3.2)
Not Available	109 (51.2)	982 (55.6)	969 (59.0)	141 (49.7)	1,018 (49.7)	1,057 (55.8)	184 (50.8)	1,343 (50.0)	1,269 (53.0)	434 (50.5)	3,343 (51.4)	3,295 (55.6)
Missing	31	233	163	23	161	175	45	363	284	99	757	622
Killip classification code, No. (%)												
I	130 (63.7)	955 (56.2)	687 (45.0)	163 (59.3)	959 (49.0)	708 (39.4)	272 (79.4)	1,671 (69.2)	1,139 (57.0)	565 (68.7)	3,585 (59.0)	2,534 (47.6)
II	17 (8.3)	224 (13.2)	285 (18.6)	31 (11.3)	304 (15.6)	324 (18.0)	26 (7.5)	351 (14.5)	438 (21.8)	74 (9.0)	879 (14.4)	1,047 (19.6)
III	4 (2.0)	51 (3.0)	71 (4.7)	4 (1.4)	66 (3.4)	79 (4.4)	10 (3.0)	87 (3.6)	137 (6.8)	18 (2.2)	204 (3.4)	287 (5.4)
IV	6 (3.0)	119 (7.0)	101 (6.7)	16 (5.8)	142 (7.2)	196 (11.0)	27 (7.7)	259 (10.7)	253 (12.7)	49 (6.0)	520 (8.6)	550 (10.4)
Not stated/ inadequately described	47 (23.0)	351 (20.6)	381 (25.0)	61 (22.2)	484 (24.8)	487 (27.2)	8 (2.4)	48 (2.0)	33 (1.7)	116 (14.1)	883 (14.6)	901 (17.0)
Not Available	3	36	51	5	54	68	64	604	656	72	694	775
Missing	37	263	228	27	202	209	0	24	20	64	489	457

Year	2011			2012			2013			2011-2013		
ACS Stratum	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	**244**	**1,999**	**1,804**	**307**	**2,211**	**2,071**	**407**	**3,044**	**2,676**	**958**	**7,254**	**6,551**
Total cholesterol, mmol/L												
N	194	1,574	1,285	221	1,620	1,398	322	2,173	1,821	737	5,367	4,504
Mean (SD)	5.4 (1.5)	5.4 (1.5)	4.8 (1.4)	5.5 (1.3)	5.4 (1.5)	4.9 (1.4)	5.4 (1.5)	5.3 (1.4)	4.8 (1.3)	5.4 (1.4)	5.4 (1.5)	4.8 (1.4)
Median (min, max)	5.3 (2.7, 13.7)	5.2 (2.0, 14.6)	4.6 (2.0, 17.0)	5.4 (2.6, 10.1)	5.3 (2.0, 14.0)	4.7 (2.0, 12.5)	5.1 (2.2, 16.9)	5.2 (2.1, 14.5)	4.7 (2.0, 10.8)	5.3 (2.2, 16.9)	5.2 (2.0, 14.6)	4.7 (2.0, 17.0)
IQR	1.6	1.8	1.8	1.5	1.9	2.0	1.8	1.8	1.7	1.7	1.9	1.9
Not Done	40 (17.0)	329 (17.2)	429 (25.0)	58 (20.8)	484 (23.0)	551 (28.2)	44 (12.0)	529 (19.6)	608 (25.0)	142 (16.2)	1,342 (20.0)	1,588 (26.0)
Missing	10	96	90	28	107	122	41	342	247	79	545	459
HDL-C, mmol/L												
N	187	1,526	1,233	220	1,559	1,345	310	2,125	1,774	717	5,210	4,352
Mean (SD)	1.0 (0.4)	1.1 (0.4)	1.2 (0.4)	1.0 (0.2)	1.0 (0.3)	1.1 (0.4)	1.0 (0.4)	1.1 (0.3)	1.1 (0.4)	1.0 (0.3)	1.1 (0.3)	1.1 (0.4)
Median (min, max)	1.0 (0.5, 4.1)	1.0 (0.5, 4.9)	1.1 (0.5, 4.1)	0.9 (0.5, 1.8)	1.0 (0.5, 4.4)	1.1 (0.5, 3.9)	1.0 (0.5, 4.3)	1.0 (0.5, 4.5)	1.1 (0.5, 4.6)	1.0 (0.5, 4.3)	1.0 (0.5, 4.9)	1.1 (0.5, 4.6)
IQR	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.4
Not Done	42 (18.4)	360 (19.0)	464 (27.4)	58 (20.8)	508 (24.6)	580 (30.2)	53 (14.6)	574 (21.2)	645 (26.6)	153 (17.6)	1,442 (21.6)	1,689 (28.0)
Missing	15	113	107	29	144	146	44	345	257	88	602	510
LDL-C, mmol/L												
N	191	1,546	1,259	223	1,578	1,377	307	2,086	1,758	721	5,210	4,394
Mean (SD)	3.6 (1.4)	3.5 (1.3)	3.0 (1.2)	3.5 (1.2)	3.6 (1.4)	3.1 (1.3)	3.4 (1.2)	3.4 (1.3)	3.0 (1.2)	3.5 (1.3)	3.5 (1.3)	3.0 (1.2)
Median (min, max)	3.4 (0.7, 12.0)	3.4 (0.5, 9.1)	2.8 (0.5, 10.9)	3.5 (0.6, 8.0)	3.4 (0.6, 12.2)	2.9 (0.6, 9.4)	3.3 (0.7, 8.9)	3.3 (0.6, 12.3)	2.9 (0.5, 8.1)	3.4 (0.6, 12.0)	3.4 (0.5, 12.3)	2.9 (0.5, 10.9)
IQR	1.6	1.7	1.5	1.5	1.8	1.7	1.6	1.7	1.6	1.5	1.7	1.6
Not Done	45 (19.0)	361 (19.0)	462 (26.8)	62 (21.8)	521 (24.8)	582 (29.8)	61 (16.6)	618 (22.8)	679 (27.8)	168 (18.8)	1,500 (22.4)	1,723 (28.2)
Missing	8	92	83	22	112	112	39	340	239	69	544	434

Year	2011			2012			2013			2011-2013		
ACS Stratum	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	**244**	**1,999**	**1,804**	**307**	**2,211**	**2,071**	**407**	**3,044**	**2,676**	**958**	**7,254**	**6,551**
Triglycerides, mmol/L												
N	193	1,573	1,287	222	1,608	1,408	320	2,133	1,785	735	5,314	4,480
Mean (SD)	1.9 (1.2)	1.9 (1.2)	1.5 (0.9)	2.0 (1.2)	1.9 (1.2)	1.5 (0.9)	1.9 (1.3)	1.9 (1.3)	1.5 (0.8)	1.9 (1.2)	1.9 (1.2)	1.5 (0.9)
Median (min, max)	1.6 (0.5, 7.4)	1.6 (0.5, 15.0)	1.3 (0.5, 11.8)	1.6 (0.6, 8.0)	1.6 (0.5, 13.9)	1.3 (0.5, 10.9)	1.6 (0.5, 11.8)	1.6 (0.5, 15.0)	1.3 (0.5, 7.9)	1.6 (0.5, 11.8)	1.6 (0.5, 15.0)	1.3 (0.5, 11.8)
IQR	1.0	1.1	0.8	1.2	1.1	0.8	1.1	1.0	0.8	1.1	1.0	0.8
Not Done	42 (17.8)	333 (17.4)	422 (24.6)	59 (21.0)	484 (23.2)	547 (28.0)	49 (13.2)	565 (21.0)	635 (26.2)	150 (17.0)	1,382 (20.6)	1,604 (26.4)
Missing	9	93	95	26	119	116	38	346	256	73	558	467
* HbA1c, mmol/L												
N							60	508	441	60	508	441
Mean (SD)							7.7 (2.7)	7.8 (2.6)	7.5 (2.7)	7.7 (2.7)	7.8 (2.6)	7.5 (2.7)
Median (min, max)							6.4 (4.5, 15.0)	6.9 (4.4, 32.0)	6.6 (4.2, 30.0)	6.4 (4.5, 15.0)	6.9 (4.4, 32.0)	6.6 (4.2, 30.0)
IQR							4.7	3.1	2.5	4.7	3.1	2.5
Not done							207 (77.6)	1,513 (74.8)	1,502 (77.4)	207 (77.6)	1,513 (74.8)	1,502 (77.4)
Missing							140	1023	733	140	1023	733
Left ventricular ejection fraction, %												
N	132	975	842	156	1,055	938	188	1,344	1,085	476	3,374	2,865
Mean (SD)	48.7 (12.3)	46.7 (13.0)	45.3 (14.5)	47.2 (12.3)	47.0 (12.5)	46.0 (13.4)	49.0 (12.2)	47.5 (12.5)	46.3 (13.0)	48.3 (12.3)	47.1 (12.7)	45.9 (13.6)
Median (min, max)	50.0 (15.2, 88.0)	47.0 (6.3, 81.0)	45.0 (6.4, 84.0)	50.0 (7.2, 75.0)	48.0 (7.0, 85.0)	46.0 (5.3, 85.0)	50.0 (20.0, 88.0)	48.0 (6.6, 83.9)	45.0 (6.8, 89.0)	50.0 (7.2, 88.0)	47.0 (6.3, 85.0)	45.0 (5.3, 89.0)
IQR	15.0	16.5	21.0	15.5	15.0	20.0	13.0	15.0	17.0	15.0	15.0	20.0
Not Done	81 (38.0)	747 (43.4)	712 (45.8)	109 (41.2)	877 (45.4)	902 (49.0)	151 (44.6)	1,160 (46.4)	1,196 (52.4)	341 (41.8)	2,784 (45.2)	2,810 (49.6)
Missing	31	277	250	42	279	231	68	540	395	141	1096	876

Year	2011			2012			2013			2011-2013		
ACS Stratum	**Young**	**Middle-age**	**Elderly**	**Young**	**Middle-age**	**Elderly**	**Young**	**Middle-age**	**Elderly**	**Young**	**Middle-age**	**Elderly**
Total	**244**	**1,999**	**1,804**	**307**	**2,211**	**2,071**	**407**	**3,044**	**2,676**	**958**	**7,254**	**6,551**
ECG, No. (%)												
Inferior leads	95 (39.0)	678 (34.0)	548 (30.4)	113 (36.8)	759 (34.4)	644 (31.0)	170 (41.8)	1,068 (35.0)	861 (32.2)	378 (39.4)	2,505 (34.6)	2,053 (31.4)
Anterior leads	119 (48.8)	847 (42.4)	722 (40.0)	127 (41.4)	985 (44.6)	844 (40.8)	182 (44.8)	1,279 (42.0)	1,078 (40.2)	428 (44.6)	3,111 (42.8)	2,644 (40.4)
Lateral leads	53 (21.8)	467 (23.4)	509 (28.2)	70 (22.8)	488 (22.0)	574 (27.8)	86 (21.2)	708 (23.2)	819 (30.6)	209 (21.8)	1,663 (23.0)	1,902 (29.0)
True posterior	16 (6.6)	108 (5.4)	80 (4.4)	13 (4.2)	99 (4.4)	72 (3.4)	28 (6.8)	134 (4.4)	107 (4.0)	57 (6.0)	341 (4.8)	259 (4.0)
Right ventricle	6 (2.4)	58 (3.0)	49 (2.8)	8 (2.6)	65 (3.0)	62 (3.0)	24 (5.8)	114 (3.8)	82 (3.0)	38 (4.0)	237 (3.2)	193 (3.0)
None	17 (7.0)	198 (10.0)	226 (12.6)	25 (8.2)	212 (9.6)	241 (11.6)	38 (9.4)	429 (14.0)	432 (16.2)	80 (8.4)	839 (11.6)	899 (13.8)
Not stated/ inadequately described	11 (4.6)	147 (7.4)	141 (7.8)	11 (3.6)	116 (5.2)	121 (5.8)	15 (3.6)	124 (4.0)	141 (5.2)	37 (3.8)	387 (5.4)	403 (6.2)
Total number of STEMI patients who were given fibrinolytic therapy at this centre	89	658	384	94	596	419	146	817	514	329	2,071	1,317
Pain to needle time, min (** symptom to treatment)												
N	69	485	255	61	417	266	110	592	360	240	1494	881
Mean (SD)	201.4 (196.0)	218.3 (174.1)	226.3 (173.6)	263.4 (223.7)	237.4 (192.5)	308.6 (240.9)	302.7 (246.6)	256.5 (215.4)	242.1 (187.4)	263.6 (230.3)	238.8 (196.9)	257.6 (204.1)
Median (min, max)	135.0 (30.0, 1,315.0)	160.0 (10.0, 1,080.0)	165.0 (16.0, 960.0)	170.0 (30.0, 940.0)	180.0 (4.0, 1,185.0)	240.0 (20.0, 1,439.0)	222.5 (40.0, 1,185.0)	191.0 (10.0, 1,375.0)	195.0 (10.0, 1,222.0)	180.0 (30.0, 1,315.0)	180.0 (4.0, 1,375.0)	200.0 (10.0, 1,439.0)
IQR	140.0	160.0	205.0	210.0	175.0	240.0	205.0	180.0	182.5	197.5	170.0	210.0
Missing	20	173	129	33	179	153	36	225	154	89	577	436

Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above
* *Definition is different in CRF version 2013*
** *Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy*
Note: Not all participating centre performed Troponin T or Troponin I tests
Note: Percentage is to the nearest decimal point

Table 3.3 Cardiac presentation of patients with ACS by gender, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
ACS Stratum	Male	Female	Male	Female	Male	Female	Male	Female
Total	**3,145**	**902**	**3,628**	**961**	**4,865**	**1,262**	**11,638**	**3,125**
ACS stratum, No. (%)								
STEMI	1,738 (55.2)	317 (35.2)	2,048 (56.4)	338 (35.2)	2,611 (53.7)	450 (35.7)	6,397 (55.0)	1,105 (35.3)
NSTEMI	787 (25.0)	307 (34.0)	855 (23.6)	291 (30.2)	1240 (25.5)	362 (28.7)	2,882 (24.8)	960 (30.7)
UA	620 (19.8)	278 (30.8)	725 (20.0)	332 (34.6)	1014 (20.8)	450 (35.6)	2,359 (20.2)	1,060 (34.0)
Systolic blood pressure, mmHg								
N	2,934	851	3,483	886	4,648	1,172	11,065	2,909
Mean (SD)	135.9 (27.4)	144.0 (30.3)	135.1 (28.3)	142.2 (33.1)	135.7 (28.9)	143.0 (32.1)	135.6 (28.3)	143.1 (31.9)
Median (min, max)	134.0 (50.0, 263.0)	140.0 (59.0, 270.0)	133.0 (53.0, 261.0)	140.0 (58.0, 270.0)	133.0 (52.0, 268.0)	141.0 (57.0, 259.0)	133.0 (50.0, 268.0)	140.0 (57.0, 270.0)
IQR	36.0	38.0	35.0	42.0	36.0	40.0	36.0	41.0
Missing	211	51	145	75	217	90	573	216
Diastolic blood pressure, mmHg								
N	2,929	851	3,467	882	4,643	1,171	11,039	2,904
Mean (SD)	81.1 (17.6)	79.9 (18.0)	80.5 (18.1)	78.7 (18.6)	81.0 (18.4)	79.3 (18.6)	80.9 (18.1)	79.3 (18.4)
Median (min, max)	80.0 (10.0, 166.0)	79.0 (24.0, 170.0)	80.0 (11.0, 170.0)	78.0 (11.0, 166.0)	80.0 (10.0, 170.0)	78.0 (28.0, 170.0)	80.0 (10.0, 170.0)	78.0 (11.0, 170.0)
IQR	22.0	22.0	22.0	23.0	23.0	23.0	22.0	22.0
Missing	216	51	161	79	222	91	599	221
Pulse pressure, mmHg								
N	2,923	849	3,461	880	4,629	1,171	11,013	2,900
Mean (SD)	54.9 (18.7)	64.1 (22.7)	54.5 (19.2)	63.6 (23.9)	54.9 (19.1)	63.7 (23.8)	54.8 (19.0)	63.8 (23.5)
Median (min, max)	52.0 (1.0, 160.0)	62.0 (11.0, 158.0)	51.0 (3.0, 178.0)	62.0 (8.0, 198.0)	52.0 (1.0, 147.0)	61.0 (13.0, 169.0)	52.0 (1.0, 178.0)	61.0 (8.0, 198.0)
IQR	23.0	29.0	24.0	33.0	25.0	32.0	24.0	31.0
Missing	222	53	167	81	236	91	625	225

Year	2011 Male	2011 Female	2012 Male	2012 Female	2013 Male	2013 Female	2011-2013 Male	2011-2013 Female
ACS Stratum								
Total	**3,145**	**902**	**3,628**	**961**	**4,865**	**1,262**	**11,638**	**3,125**
Heart rate at presentation, beats/min								
N	2,926	854	3,453	881	4,618	1,158	10,997	2,893
Mean (SD)	82.2 (20.0)	86.0 (21.6)	82.7 (21.1)	85.8 (21.6)	83.0 (21.1)	86.2 (21.6)	82.7 (20.8)	86.0 (21.6)
Median (min, max)	80.0 (25.0, 180.0)	84.0 (30.0, 194.0)	80.0 (20.0, 195.0)	84.0 (38.0, 200.0)	80.0 (30.0, 198.0)	84.0 (30.0, 197.0)	80.0 (20.0, 198.0)	84.0 (30.0, 200.0)
IQR	26.0	30.0	27.0	29.0	27.0	28.0	27.0	29.0
Missing	219	48	175	80				
Episodes of angina in past 24 hours, No. (%)								
0-2	1,153 (41.2)	272 (33.0)	1,562 (46.4)	322 (37.3)	1,999 (46.0)	473 (43.4)	4,714 (44.8)	1,067 (38.5)
>2	105 (3.8)	30 (3.7)	103 (3.0)	27 (3.2)	133 (3.0)	34 (3.2)	341 (3.2)	91 (3.3)
Not Available	1,540 (55.0)	520 (63.3)	1,702 (50.6)	514 (59.5)	2,214 (51.0)	582 (53.4)	5,456 (52.0)	1,616 (58.2)
Missing	347	80	261	98	519	173	1127	351
Killip classification code, No. (%)								
I	1,400 (52.2)	372 (49.7)	1,503 (46.6)	327 (41.2)	2,499 (65.2)	583 (63.0)	5,402 (55.4)	1,282 (52.0)
II	407 (15.2)	119 (15.8)	529 (16.4)	130 (16.4)	660 (17.2)	155 (16.8)	1,596 (16.4)	404 (16.3)
III	100 (3.8)	26 (3.5)	112 (3.4)	37 (4.6)	176 (4.6)	58 (6.3)	388 (4.0)	121 (5.0)
IV	190 (7.0)	36 (4.8)	286 (8.8)	68 (8.6)	422 (11.0)	117 (12.6)	898 (9.2)	221 (9.0)
Not stated/ inadequately described	582 (21.8)	197 (26.2)	801 (24.8)	231 (29.2)	78 (2.0)	11 (1.3)	1,461 (15.0)	439 (17.7)
Not Available	64	26	86	41	991	333	1141	400
Missing	402	126	311	127	39	5	752	258
Total cholesterol, mmol/L								
N	2,414	639	2,625	614	3,477	839	8,516	2,092
Mean (SD)	5.1 (1.4)	5.1 (1.6)	5.2 (1.5)	5.1 (1.6)	5.1 (1.4)	5.0 (1.5)	5.1 (1.4)	5.1 (1.6)
Median (min, max)	5.0 (2.0, 13.3)	4.9 (2.0, 17.0)	5.1 (2.0, 14.0)	5.0 (2.0, 12.5)	5.0 (2.0, 14.1)	4.8 (2.1, 16.9)	5.0 (2.0, 14.1)	4.9 (2.0, 17.0)
IQR	1.8	2.0	1.9	2.0	1.9	1.8	1.8	1.9
Not Done	580 (19.4)	218 (25.4)	814 (23.6)	279 (31.2)	895 (20.4)	286 (25.4)	2,289 (21.2)	783 (27.2)
Missing	151	45	189	68	493	137	833	250

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Year	2011		2012		2013		2011-2013	
ACS Stratum	Male	Female	Male	Female	Male	Female	Male	Female
Total	**3,145**	**902**	**3,628**	**961**	**4,865**	**1,262**	**11,638**	**3,125**
HDL-C, mmol/L								
N	2,324	622	2,535	589	3,396	813	8,255	2,024
Mean (SD)	1.1 (0.4)	1.2 (0.4)	1.1 (0.3)	1.2 (0.4)	1.1 (0.3)	1.2 (0.4)	1.1 (0.3)	1.2 (0.4)
Median (min, max)	1.0 (0.5, 4.9)	1.2 (0.5, 4.0)	1.0 (0.5, 3.9)	1.1 (0.5, 4.4)	1.0 (0.5, 4.6)	1.1 (0.5, 4.6)	1.0 (0.5, 4.9)	1.1 (0.5, 4.6)
IQR	0.3	0.5	0.3	0.4	0.3	0.5	0.3	0.5
Not Done	641 (21.6)	225 (26.6)	855 (25.2)	291 (33.0)	972 (22.2)	300 (27.0)	2468 (23.0)	816 (28.8)
Missing	180	55	238	81	497	149	915	285
LDL-C, mmol/L								
N	2,360	636	2,576	602	3,357	794	8,293	2,032
Mean (SD)	3.3 (1.3)	3.1 (1.4)	3.4 (1.3)	3.2 (1.4)	3.3 (1.2)	3.1 (1.3)	3.3 (1.3)	3.1 (1.4)
Median (min, max)	3.2 (0.5, 10.1)	2.9 (0.8, 12.0)	3.2 (0.6, 12.2)	3.1 (0.6, 9.4)	3.2 (0.5, 10.2)	2.9 (0.6, 12.3)	3.2 (0.5, 12.2)	3.0 (0.6, 12.3)
IQR	1.7	1.7	1.8	1.9	1.6	1.5	1.7	1.7
Not Done	642 (21.4)	226 (26.2)	872 (25.2)	293 (32.8)	1,028 (23.4)	330 (29.4)	2542 (23.4)	849 (29.4)
Missing	143	40	180	66	480	138	803	244
Triglycerides, mmol/L								
N	2,420	633	2,624	614	3,431	807	8,475	2,054
Mean (SD)	1.7 (1.1)	1.7 (1.1)	1.7 (1.1)	1.7 (1.1)	1.8 (1.2)	1.6 (0.9)	1.7 (1.1)	1.7 (1.0)
Median (min, max)	1.4 (0.5, 15.0)	1.4 (0.5, 12.0)	1.5 (0.5, 13.9)	1.4 (0.5, 10.9)	1.5 (0.5, 15.0)	1.4 (0.5, 7.7)	1.5 (0.5, 15.0)	1.4 (0.5, 12.0)
IQR	0.9	0.9	1.0	0.8	1.0	0.8	1.0	0.8
Not Done	583 (19.4)	214 (25.2)	810 (23.6)	280 (31.4)	941 (21.6)	308 (27.6)	2,334 (21.6)	802 (28.0)
Missing	142	55	194	67	493	147	829	269

Year	2011		2012		2013		2011-2013	
ACS Stratum	Male	Female	Male	Female	Male	Female	Male	Female
Total	3,145	902	3,628	961	4,865	1,262	11,638	3,125
* HbA1c, mmol/L								
N					794	215	794	215
Mean (SD)					7.5 (2.7)	8.0 (2.4)	7.5 (2.7)	8.0 (2.4)
Median (min, max)					6.5 (4.2, 32.0)	7.5 (4.5, 15.3)	6.5 (4.2, 32.0)	7.5 (4.5, 15.3)
IQR					2.9	3.3	2.9	3.3
Not done					2,543 (76.2)	679 (76.0)	2,543 (76.2)	679 (76.0)
Missing					1,528	368	1,528	368
Left ventricular ejection fraction, %								
N	1,561	388	1,757	392	2,133	484	5,451	1,264
Mean (SD)	45.8 (13.5)	48.1 (14.3)	46.0 (12.8)	48.9 (13.2)	46.6 (12.6)	49.3 (13.3)	46.2 (12.9)	48.8 (13.6)
Median (min, max)	45.7 (6.3, 88.0)	48.0 (6.6, 84.0)	46.0 (5.3, 85.0)	50.0 (15.0, 81.0)	46.0 (6.6, 89.0)	50.0 (14.0, 87.0)	46.0 (5.3, 89.0)	50.0 (6.6, 87.0)
IQR	19.0	20.5	18.0	18.0	15.0	18.0	17.0	18.0
Not Done	1,161 (42.6)	379 (49.4)	1,439 (45.0)	449 (53.4)	1,937 (47.6)	570 (54.0)	4,537 (45.4)	1,398 (52.6)
Missing	423	135	432	120	795	208	1650	463
ECG, No. (%)								
Inferior leads	1,056 (33.6)	265 (29.4)	1,235 (34.0)	281 (29.2)	1,713 (35.2)	386 (30.6)	4,004 (34.4)	932 (29.8)
Anterior leads	1,324 (42.0)	364 (40.4)	1,576 (43.4)	380 (39.6)	2,053 (42.2)	486 (38.6)	4,953 (42.6)	1,230 (39.4)
Lateral leads	774 (24.6)	255 (28.2)	871 (24.0)	261 (27.2)	1,219 (25.0)	394 (31.2)	2,864 (24.6)	910 (29.2)
True posterior	166 (5.2)	38 (4.2)	159 (4.4)	25 (2.6)	229 (4.8)	40 (3.2)	554 (4.8)	103 (3.2)
Right ventricle	92 (3.0)	21 (2.4)	113 (3.2)	22 (2.2)	188 (3.8)	32 (2.6)	393 (3.4)	75 (2.4)
None	339 (10.8)	102 (11.4)	349 (9.6)	129 (13.4)	665 (13.6)	234 (18.6)	1,353 (11.6)	465 (14.8)
Not stated/ inadequately described	215 (6.8)	84 (9.4)	188 (5.2)	60 (6.2)	203 (4.2)	77 (6.2)	606 (5.2)	221 (7.0)

Year	2011		2012		2013		2011-2013	
ACS Stratum	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Total	**3,145**	**902**	**3,628**	**961**	**4,865**	**1,262**	**11,638**	**3,125**
Total number of STEMI patients who were given fibrinolytic therapy at this centre	966	165	954	155	1267	210	3187	530
Pain to needle time, min (** symptom to treatment)								
N	701	108	650	94	918	144	2,269	346
Mean (SD)	213.7 (174.1)	256.1 (182.7)	260.6 (218.8)	295.5 (192.8)	250.3 (209.5)	295.0 (212.7)	242.0 (202.9)	283.0 (198.6)
Median (min, max)	156.0 (10.0, 1315.0)	177.5 (30.0, 930.0)	205.0 (4.0, 1,439.0)	232.5 (55.0, 940.0)	190.0 (10.0, 1,375.0)	247.5 (15.0, 1,165.0)	180.0 (4.0, 1,439.0)	227.5 (15.0, 1,165.0)
IQR	161.0	232.5	195.0	240.0	175.0	237.5	185.0	233.0
Missing	265	57	304	61	349	66	918	184

*Definition is different in CRF version 2013
** Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy
Note: Not all participating centre performed Troponin T or Troponin I tests
Note: Percentage is to the nearest decimal point

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
Diabetes status	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	1,742	1,821	200	1,974	2,023	246	2,568	2,794	346	6,284	6,638	792
ACS stratum, No. (%)												
STEMI	713 (41.0)	1027 (56.4)	136 (68.0)	844 (42.8)	1,138 (56.2)	166 (67.4)	1,111 (43.2)	1,413 (50.6)	234 (67.6)	2,668 (42.4)	3,578 (54.0)	536 (67.7)
NSTEMI	558 (32.0)	430 (23.6)	30 (15.0)	598 (30.2)	439 (21.8)	47 (19.2)	774 (30.2)	727 (26.0)	50 (14.4)	1,930 (30.8)	1,596 (24.0)	127 (16.1)
UA	471 (27.0)	364 (20.0)	34 (17.0)	532 (27.0)	446 (22.0)	33 (13.4)	683 (26.6)	654 (23.4)	62 (18.0)	1,686 (26.8)	1,464 (22.0)	129 (16.2)
Systolic blood pressure, mmHg												
N	1657	1656	195	1908	1899	243	2438	2644	342	6003	6199	780
Mean (SD)	139.5 (28.1)	136.8 (28.2)	135.1 (30.3)	140.0 (29.8)	134.3 (28.9)	135.4 (32.2)	139.9 (30.1)	135.9 (29.1)	135.6 (31.5)	139.8 (29.5)	135.6 (28.8)	135.4 (31.4)
Median (min, max)	138.0 (55.0, 263.0)	135.0 (50.0, 270.0)	132.0 (62.0, 245.0)	137.0 (58.0, 270.0)	131.0 (53.0, 261.0)	130.0 (65.0, 237.0)	138.0 (52.0, 264.0)	133.0 (53.0, 268.0)	134.0 (61.0, 239.0)	138.0 (52.0, 270.0)	133.0 (50.0, 270.0)	132.5 (61.0, 245.0)
IQR	36.0	38.0	34.0	37.0	37.0	41.0	39.0	36.0	40.0	38.0	37.0	38.0
Missing	85	165	5	66	124	3	130	150	4	281	439	12
Diastolic blood pressure, mmHg												
N	1,658	1,651	195	1,895	1,894	242	2,438	2,637	343	5,991	6,182	780
Mean (SD)	80.3 (17.0)	81.4 (18.3)	80.7 (19.5)	80.0 (18.0)	80.1 (18.4)	81.1 (19.9)	80.5 (18.2)	81.1 (18.6)	80.4 (19.7)	80.3 (17.8)	80.9 (18.5)	80.7 (19.7)
Median (min, max)	80.0 (22.0, 165.0)	80.0 (10.0, 170.0)	80.0 (42.0, 145.0)	79.0 (11.0, 166.0)	79.0 (27.0, 170.0)	80.0 (31.0, 158.0)	80.0 (10.0, 170.0)	80.0 (30.0, 170.0)	78.0 (10.0, 160.0)	80.0 (10.0, 170.0)	80.0 (10.0, 170.0)	80.0 (10.0, 160.0)
IQR	21.0	23.0	25.0	23.0	23.0	24.0	23.0	23.0	23.0	21.0	23.0	24.0
Missing	84	170	5	79	129	4	130	157	3	293	456	12

*Definition is different in CRF version 2013
** Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy
Note: Not all participating centre performed Troponin T or Troponin I tests
Note: Percentage is to the nearest decimal point

Year	2011			2012			2013			2011-2013		
Diabetes status	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	**1,742**	**1,821**	**200**	**1,974**	**2,023**	**246**	**2,568**	**2,794**	**346**	**6,284**	**6,638**	**792**
Pulse pressure, mmHg												
N	1,655	1,646	195	1,894	1,887	242	2,434	2,632	338	5,983	6,165	775
Mean (SD)	59.3 (20.7)	55.6 (19.4)	54.4 (19.9)	59.8 (21.5)	54.2 (19.4)	54.3 (20.2)	59.4 (21.5)	54.9 (19.3)	55.9 (21.3)	59.5 (21.3)	54.9 (19.3)	55.0 (20.6)
Median (min, max)	56.0 (6.0, 160.0)	53.0 (4.0, 154.0)	50.0 (13.0, 125.0)	56.0 (5.0, 198.0)	51.0 (3.0, 154.0)	50.0 (19.0, 133.0)	57.0 (6.0, 169.0)	52.0 (1.0, 142.0)	52.0 (1.0, 137.0)	57.0 (5.0, 198.0)	52.0 (1.0, 154.0)	51.0 (1.0, 137.0)
IQR	27.0	26.0	24.0	27.0	25.0	25.0	28.0	25.0	28.0	28.0	25.0	27.0
Missing	87	175	5	80	136	4	134	162	8	301	473	17
Heart rate at presentation, beats/min												
N	1,658	1,656	192	1,896	1,881	241	2,428	2,617	339	5,982	6,154	772
Mean (SD)	85.9 (20.5)	80.6 (19.8)	82.8 (21.4)	86.3 (20.7)	80.8 (21.7)	82.9 (21.4)	86.3 (21.1)	81.4 (20.5)	83.5 (25.0)	86.2 (20.8)	81.0 (20.7)	83.1 (23.0)
Median (min, max)	85.0 (25.0, 194.0)	78.5 (30.0, 180.0)	81.0 (36.0, 167.0)	85.0 (28.0, 181.0)	80.0 (20.0, 200.0)	81.0 (40.0, 182.0)	84.0 (30.0, 195.0)	79.0 (30.0, 192.0)	80.0 (34.0, 198.0)	85.0 (25.0, 195.0)	79.0 (20.0, 200.0)	80.0 (34.0, 198.0)
IQR	27.0	26.0	27.0	27.0	27.0	23.0	27.0	26.0	29.0	27.0	26.0	26.5
Missing	84	165	8	78	142	5	140	177	7	302	484	20
Episodes of angina in past 24 hours, No. (%)												
0-2	564 (36.8)	680 (40.3)	76 (40.4)	720 (39.1)	908 (48.4)	78 (33.5)	969 (43.2)	1,221 (48.8)	107 (32.6)	2,253 (40.0)	2,809 (46.4)	261 (34.8)
>2	68 (4.4)	55 (3.2)	6 (3.2)	55 (3.0)	55 (3.0)	9 (3.8)	79 (3.5)	74 (3.0)	8 (2.4)	202 (3.6)	184 (3.0)	23 (3.0)
Not Available	903 (58.8)	953 (56.5)	106 (56.4)	1,066 (57.9)	911 (48.6)	146 (62.7)	1,200 (53.3)	1,207 (48.2)	214 (65.0)	3,169 (56.4)	3,071 (50.6)	466 (62.2)
Missing	207	133	12	133	149	13	320	292	17	660	574	42

*Definition is different in CRF version 2013
** Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy
Note: Not all participating centre performed Troponin T or Troponin I tests
Note: Percentage is to the nearest decimal point

Year	2011			2012			2013			2011-2013		
Diabetes status	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	1,742	1,821	200	1,974	2,023	246	2,568	2,794	346	6,284	6,638	792
Killip classification code, No. (%)												
I	697 (47.5)	889 (56.0)	82 (48.6)	671 (39.2)	875 (49.0)	107 (48.0)	1,135 (60.2)	1,566 (70.0)	158 (54.8)	2,503 (49.4)	3,330 (59.4)	347 (51.0)
II	248 (17.0)	216 (13.5)	28 (16.6)	320 (18.6)	268 (15.0)	33 (14.8)	355 (18.8)	347 (15.5)	51 (17.8)	923 (18.2)	831 (14.8)	112 (16.5)
III	64 (4.4)	50 (3.2)	5 (3.0)	72 (4.2)	57 (3.2)	9 (4.0)	136 (7.2)	77 (3.3)	11 (3.8)	272 (5.4)	184 (3.2)	25 (3.7)
IV	115 (7.7)	78 (5.0)	14 (8.2)	142 (8.2)	147 (8.2)	31 (14.0)	234 (12.4)	201 (9.0)	57 (19.8)	491 (9.6)	426 (7.6)	102 (15.0)
Not stated/ inadequately described	342 (23.4)	356 (22.3)	40 (23.6)	511 (29.8)	440 (24.6)	43 (19.2)	28 (1.4)	47 (2.2)	11 (3.8)	881 (17.4)	843 (15.0)	94 (13.8)
Not Available	37	43	7	63	60	1	665	540	56	765	643	64
Missing	239	189	24	195	176	22	15	16	2	449	381	48
Total cholesterol, mmol/L												
N	1,270	1,393	150	1,340	1,454	183	1,712	2,015	267	4,322	4,862	600
Mean (SD)	4.9 (1.5)	5.3 (1.4)	5.3 (1.5)	5.0 (1.5)	5.3 (1.4)	5.5 (1.5)	4.9 (1.5)	5.2 (1.4)	5.3 (1.3)	4.9 (1.5)	5.2 (1.4)	5.4 (1.4)
Median (min, max)	4.7 (2.0, 17.0)	5.2 (2.0, 14.5)	5.3 (2.5, 12.1)	4.8 (2.0, 14.0)	5.1 (2.0, 11.3)	5.6 (2.3, 9.7)	4.8 (2.0, 14.5)	5.1 (2.0, 16.9)	5.3 (2.3, 10.5)	4.8 (2.0, 17.0)	5.1 (2.0, 16.9)	5.4 (2.3, 12.1)
IQR	1.8	1.8	1.9	1.9	1.9	2.0	1.8	1.7	1.8	1.9	1.8	1.9
Not Done	381 (23.0)	344 (19.8)	41 (21.4)	534 (28.4)	461 (24.0)	40 (18.0)	587 (25.6)	494 (19.6)	45 (14.4)	1,502 (25.8)	1,299 (21.0)	126 (17.4)
Missing	91	84	9	100	108	23	269	285	34	460	477	66
HDL-C, mmol/L												
N	1,221	1,356	133	1,288	1,418	173	1,671	1,970	262	4,180	4,744	568
Mean (SD)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.1 (0.4)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)
Median (min, max)	1.0 (0.5, 4.3)	1.1 (0.5, 4.9)	1.0 (0.5, 3.3)	1.0 (0.5, 3.9)	1.0 (0.5, 4.4)	1.0 (0.5, 2.5)	1.0 (0.5, 4.6)	1.1 (0.5, 4.6)	1.0 (0.5, 4.1)	1.0 (0.5, 4.6)	1.1 (0.5, 4.9)	1.0 (0.5, 4.1)
IQR	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Not Done	404 (24.8)	370 (21.4)	56 (29.6)	549 (29.8)	478 (25.2)	49 (22.0)	625 (27.2)	530 (21.2)	48 (15.4)	1,578 (27.4)	1,378 (22.6)	153 (21.2)
Missing	117	95	11	137	127	24	272	294	36	526	516	71

Year	2011			2012			2013			2011-2013		
Diabetes status	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	1,742	1,821	200	1,974	2,023	246	2,568	2,794	346	6,284	6,638	792
LDL-C, mmol/L												
N	1,247	1,376	135	1,315	1,443	176	1,649	1,939	255	4,211	4,758	566
Mean (SD)	3.0 (1.3)	3.4 (1.3)	3.6 (1.4)	3.1 (1.3)	3.4 (1.3)	3.8 (1.4)	3.0 (1.3)	3.3 (1.2)	3.5 (1.2)	3.1 (1.3)	3.4 (1.3)	3.6 (1.3)
Median (min, max)	2.9 (0.5, 10.9)	3.3 (0.5, 12.0)	3.4 (0.7, 10.1)	3.0 (0.6, 12.2)	3.3 (0.6, 11.9)	3.8 (1.0, 9.1)	2.8 (0.5, 12.3)	3.3 (0.6, 10.2)	3.5 (1.0, 9.0)	2.9 (0.5, 12.3)	3.3 (0.5, 12.0)	3.5 (0.7, 10.1)
IQR	1.6	1.7	1.8	1.7	1.7	1.8	1.6	1.5	1.7	1.7	1.6	1.8
Not Done	409 (24.6)	368 (21.2)	56 (29.4)	557 (29.8)	484 (25.2)	50 (22.2)	659 (28.6)	565 (22.6)	58 (18.6)	1,625 (27.8)	1,417 (23.0)	164 (22.4)
Missing	86	77	9	102	96	20	260	290	33	448	463	62
Triglycerides, mmol/L												
N	1,268	1,394	152	1,347	1,450	179	1,684	1,974	258	4,299	4,818	589
Mean (SD)	1.8 (1.2)	1.7 (1.0)	1.7 (0.8)	1.8 (1.1)	1.7 (1.0)	1.7 (1.0)	1.9 (1.3)	1.7 (1.0)	1.7 (1.0)	1.8 (1.2)	1.7 (1.0)	1.7 (1.0)
Median (min, max)	1.5 (0.5, 15.0)	1.4 (0.5, 11.8)	1.4 (0.6, 5.7)	1.5 (0.5, 13.9)	1.4 (0.5, 13.0)	1.4 (0.6, 6.9)	1.5 (0.5, 14.6)	1.4 (0.5, 15.0)	1.4 (0.5, 10.5)	1.5 (0.5, 15.0)	1.4 (0.5, 15.0)	1.4 (0.5, 10.5)
IQR	1.0	0.8	0.9	1.0	1.0	0.9	0.9	0.9	0.9	1.0	0.9	0.9
Not Done	381 (23.2)	344 (19.8)	40 (20.8)	532 (28.4)	457 (24.0)	42 (19.0)	612 (26.6)	525 (21.0)	53 (17.0)	1,525 (26.2)	1,326 (21.6)	135 (18.6)
Missing	93	83	8	95	116	25	272	295	35	460	494	68
* HbA1c, mmol/L												
N							570	308	52	570	308	52
Mean (SD)							8.6 (2.3)	6.4 (2.5)	6.7 (3.6)	8.6 (2.3)	6.4 (2.5)	6.7 (3.6)
Median (min, max)							8.2 (4.8, 16.5)	5.8 (4.2, 32.0)	5.8 (4.9, 30.0)	8.2 (4.8, 16.5)	5.8 (4.2, 32.0)	5.8 (4.9, 30.0)
IQR							3.3	0.9	0.9	3.3	0.9	0.9
Not done							1,245 (68.6)	1,595 (83.8)	176 (77.2)	1,245 (68.6)	1,595 (83.8)	176 (77.2)
Missing							753	891	118	753	891	118

Year	2011			2012			2013			2011-2013		
Diabetes status	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	**1,742**	**1,821**	**200**	**1,974**	**2,023**	**246**	**2,568**	**2,794**	**346**	**6,284**	**6,638**	**792**
Left ventricular ejection fraction, %												
N	846	838	98	879	959	115	1,083	1,178	150	2,808	2,975	363
Mean (SD)	45.6 (14.2)	46.7 (13.4)	46.3 (14.0)	45.1 (13.3)	47.5 (12.7)	48.1 (13.4)	46.3 (13.1)	47.7 (12.5)	47.8 (13.8)	45.7 (13.5)	47.4 (12.8)	47.5 (13.7)
Median (min, max)	45.0 (6.4, 88.0)	47.0 (6.3, 83.0)	47.0 (15.0, 76.0)	45.0 (5.3, 85.0)	49.0 (6.7, 85.0)	50.0 (7.2, 79.0)	46.0 (10.0, 89.0)	49.0 (6.6, 87.0)	50.0 (13.0, 75.0)	45.0 (5.3, 89.0)	48.0 (6.3, 87.0)	49.0 (7.2, 79.0)
IQR	20.0	17.0	20.0	20.0	15.0	18.0	17.0	15.0	17.0	20.0	15.0	19.0
Not Done	639 (43.0)	749 (47.2)	76 (43.6)	868 (49.6)	824 (46.2)	89 (43.6)	1,072 (49.8)	1,135 (49.0)	156 (51.0)	2,579 (47.8)	2,708 (47.6)	321 (47.0)
Missing	257	234	26	227	240	42	413	481	40	897	955	108
ECG, No. (%)												
Inferior leads	480 (27.6)	658 (36.2)	71 (35.6)	574 (29.0)	724 (35.8)	91 (37.0)	806 (31.4)	993 (35.6)	141 (40.8)	1,860 (29.6)	2,375 (35.8)	303 (38.2)
Anterior leads	701 (40.2)	757 (41.6)	105 (52.6)	786 (39.8)	892 (44.0)	115 (46.8)	1,017 (39.6)	1,178 (42.2)	157 (45.4)	2,504 (39.8)	2,827 (42.6)	377 (47.6)
Lateral leads	496 (28.4)	417 (22.8)	52 (26.0)	563 (28.6)	460 (22.8)	50 (20.4)	758 (29.6)	684 (24.4)	83 (24.0)	1,817 (29.0)	1,561 (23.6)	185 (23.4)
True posterior	68 (4.0)	108 (6.0)	12 (6.0)	62 (3.2)	80 (4.0)	14 (5.6)	98 (3.8)	121 (4.4)	27 (7.8)	228 (3.6)	309 (4.6)	53 (6.6)
Right ventricle	40 (2.2)	50 (2.8)	7 (3.6)	52 (2.6)	66 (3.2)	10 (4.0)	77 (3.0)	104 (3.8)	24 (7.0)	169 (2.6)	220 (3.4)	41 (5.2)
None	216 (12.4)	195 (10.8)	11 (5.6)	251 (12.8)	188 (9.2)	23 (9.4)	411 (16.0)	421 (15.0)	22 (6.4)	878 (14.0)	804 (12.2)	56 (7.0)
Not stated/ inadequately described	139 (8.0)	143 (7.8)	9 (4.6)	119 (6.0)	106 (5.2)	16 (6.6)	136 (5.2)	115 (4.2)	8 (2.4)	394 (6.2)	364 (5.4)	33 (4.2)
Total number of STEMI patients who were given fibrinolytic therapy at this centre	400	562	81	410	501	92	517	686	110	1,327	1,749	283
Pain to needle time, min (** symptom to treatment)												
N	275	411	59	279	326	62	360	498	83	914	1,235	204
Mean (SD)	250.3 (200.3)	201.5 (164.6)	228.9 (149.2)	278.7 (207.3)	256.2 (226.0)	239.9 (176.3)	271.0 (221.3)	253.9 (210.6)	271.3 (236.2)	267.1 (211.0)	237.1 (202.3)	249.5 (196.4)
Median (min, max)	185.0 (10.0, 1,315.0)	140.0 (30.0, 915.0)	180.0 (60.0, 760.0)	225.0 (15.0, 1,439.0)	180.0 (4.0, 1,314.0)	187.5 (70.0, 940.0)	207.5 (10.0, 1,165.0)	195.0 (10.0, 1,375.0)	210.0 (20.0, 1,222.0)	210.0 (10.0, 1,439.0)	170.0 (4.0, 1,375.0)	182.5 (20.0, 1,222.0)
IQR	210.0	145.0	165.0	210.0	185.0	180.0	227.5	178.0	185.0	215.0	180.0	180.0
Missing	125	151	22	131	175	30	157	188	27	413	514	79

Table 3.5 Cardiac presentation of patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
Hypertension status	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown
Total	2,547	1,106	145	2,797	1,259	202	3,630	1,857	258	8,974	4,222	605
ACS stratum, No. (%)												
STEMI	1,061 (41.6)	710 (64.2)	109 (75.2)	1,209 (43.2)	807 (64.0)	140 (69.3)	1,518 (41.8)	1,065 (57.4)	191 (74.0)	3,788 (42.2)	2,582 (61.2)	440 (72.7)
NSTEMI	782 (30.8)	236 (21.4)	22 (15.2)	806 (28.8)	246 (19.6)	35 (17.3)	1,054 (29.0)	473 (25.4)	31 (12.0)	2,642 (29.4)	955 (22.6)	88 (14.6)
UA	704 (27.6)	160 (14.4)	14 (9.6)	782 (28.0)	206 (16.4)	27 (13.4)	1,058 (29.2)	319 (17.2)	36 (14.0)	2,544 (28.4)	685 (16.2)	77 (12.7)
Systolic blood pressure, mmHg												
N	2,385	1,019	141	2,676	1,188	200	3,480	1,728	255	8,541	3,935	596
Mean (SD)	141.7 (28.6)	131.0 (26.2)	129.6 (26.0)	141.1 (30.5)	128.5 (26.0)	133.8 (28.5)	142.2 (30.7)	129.7 (25.8)	131.0 (29.1)	141.7 (30.1)	129.7 (26.0)	131.6 (28.2)
Median (min, max)	140.0 (50.0, 270.0)	129.0 (52.0, 234.0)	128.0 (62.0, 214.0)	139.0 (54.0, 270.0)	127.0 (53.0, 240.0)	131.0 (70.0, 214.0)	140.0 (52.0, 264.0)	128.0 (56.0, 268.0)	129.0 (61.0, 233.0)	140.0 (50.0, 270.0)	128.0 (52.0, 268.0)	129.0 (61.0, 233.0)
IQR	37.0	34.0	35.0	39.0	31.5	34.0	38.0	33.5	34.0	39.0	33.0	35.0
Missing	162	87	4	121	71	2	150	129	3	433	287	9
Diastolic blood pressure, mmHg												
N	2,382	1,017	141	2,664	1,183	199	3,475	1,727	255	8,521	3,927	595
Mean (SD)	82.0 (18.1)	78.7 (16.8)	78.4 (17.8)	81.3 (18.8)	77.6 (16.8)	80.7 (18.7)	82.2 (19.2)	78.5 (16.8)	78.2 (18.5)	81.8 (18.8)	78.3 (16.8)	79.1 (18.4)
Median (min, max)	81.0 (10.0, 170.0)	78.0 (25.0, 162.0)	77.0 (35.0, 126.0)	80.0 (11.0, 170.0)	77.0 (21.0, 159.0)	80.0 (31.0, 148.0)	80.0 (10.0, 170.0)	78.0 (30.0, 153.0)	78.0 (10.0, 138.0)	80.0 (10.0, 170.0)	78.0 (21.0, 162.0)	78.0 (10.0, 148.0)
IQR	22.0	22.0	20.0	23.0	20.0	24.0	23.0	22.0	24.0	22.0	22.0	22.0
Missing	165	89	4	133	76	3	155	130	3	453	295	10

Hypertension status / Year	2011 Hypertensive	2011 Non-Hypertensive	2011 Unknown	2012 Hypertensive	2012 Non-Hypertensive	2012 Unknown	2013 Hypertensive	2013 Non-Hypertensive	2013 Unknown	2011-2013 Hypertensive	2011-2013 Non-Hypertensive	2011-2013 Unknown
Total	2,547	1,106	145	2,797	1,259	202	3,630	1,857	258	8,974	4,222	605
Pulse pressure, mmHg												
N	2,378	1,013	141	2,661	1,178	199	3,467	1,723	253	85,06	3,914	593
Mean (SD)	59.7 (20.7)	52.5 (18.0)	51.2 (16.7)	59.7 (21.6)	51.1 (17.4)	53.1 (18.1)	60.2 (21.3)	51.2 (17.5)	53.4 (19.6)	59.9 (21.2)	51.5 (17.6)	52.8 (18.5)
Median (min, max)	57.0 (5.0, 160.0)	50.0 (4.0, 147.0)	50.0 (19.0, 115.0)	56.0 (5.0, 198.0)	49.0 (3.0, 154.0)	50.0 (11.0, 108.0)	58.0 (1.0, 169.0)	49.0 (1.0, 147.0)	50.0 (20.0, 137.0)	57.0 (1.0, 198.0)	49.0 (1.0, 154.0)	50.0 (11.0, 137.0)
IQR	26.0	22.0	22.0	28.0	22.0	25.0	28.0	20.0	23.0	27.0	21.0	23.0
Missing	169	93	4	136	81	3	163	134	5	468	308	12
Heart rate at presentation, beats/min												
N	2,384	1,019	139	2655	1,181	197	3,457	1,711	255	8,496	3,911	591
Mean (SD)	83.8 (20.5)	81.8 (19.9)	81.2 (20.8)	84.3 (21.3)	81.6 (21.0)	83.2 (22.8)	84.4 (21.3)	82.2 (19.9)	85.2 (26.2)	84.2 (21.1)	81.9 (20.2)	83.6 (23.9)
Median (min, max)	82.0 (25.0, 194.0)	80.0 (31.0, 160.0)	81.0 (36.0, 134.0)	83.0 (28.0, 200.0)	80.0 (20.0, 198.0)	81.0 (40.0, 182.0)	82.0 (30.0, 197.0)	80.0 (30.0, 171.0)	81.0 (34.0, 198.0)	82.0 (25.0, 200.0)	80.0 (20.0, 198.0)	81.0 (34.0, 198.0)
IQR	27.0	25.0	28.0	29.0	26.0	24.0	27.0	27.0	30.0	28.0	26.0	28.0
Missing	163	87	6	142	78	5	173	146	3	478	311	14
Episodes of angina in past 24 hours, No. (%)												
0-2	828 (36.6)	436 (42.3)	63 (45.3)	1,085 (41.6)	551 (47.5)	72 (37.2)	1,402 (43.7)	825 (50.0)	80 (33.2)	3,315 (41.0)	1,812 (47.2)	215 (37.4)
>2	89 (4.0)	38 (3.7)	3 (2.2)	83 (3.2)	30 (2.5)	8 (4.1)	120 (3.7)	37 (2.2)	3 (1.2)	292 (3.6)	105 (2.7)	14 (2.4)
Not Available	1,345 (59.4)	558 (54.0)	73 (52.5)	1,434 (55.2)	579 (50.0)	114 (58.7)	1,686 (52.6)	791 (47.8)	158 (65.6)	4,465 (55.4)	1,928 (50.1)	345 (60.2)
Missing	285	74	6	195	99	8	422	204	17	902	377	31

Year	2011			2012			2013			2011-2013		
Hypertension status	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown
Total	2,547	1,106	145	2,797	1,259	202	3,630	1,857	258	8,974	4,222	605
Killip classification code, No. (%)												
I	1,052 (49.3)	552 (57.2)	67 (52.7)	1,008 (41.2)	567 (51.0)	88 (48.0)	1,655 (62.2)	1,102 (70.6)	121 (55.2)	3,715 (51.2)	2,221 (61.0)	276 (52.2)
II	330 (15.4)	147 (15.3)	20 (15.7)	426 (17.4)	163 (14.6)	32 (17.4)	497 (18.6)	224 (14.4)	39 (17.8)	1,253 (17.4)	534 (14.6)	91 (17.2)
III	93 (4.4)	20 (2.0)	6 (4.8)	102 (4.2)	28 (2.6)	8 (4.4)	170 (6.4)	49 (3.2)	6 (2.8)	365 (5.0)	97 (2.6)	20 (3.8)
IV	143 (6.6)	49 (5.0)	11 (8.6)	200 (8.2)	102 (9.2)	20 (11.0)	290 (10.8)	156 (10.0)	46 (21.0)	633 (8.8)	307 (8.5)	77 (14.6)
Not stated/ inadequately described	517 (24.3)	198 (20.5)	23 (18.2)	708 (29.0)	251 (22.6)	35 (19.2)	51 (2.0)	28 (1.8)	7 (3.2)	1,276 (17.6)	477 (13.3)	65 (12.2)
Not Available	59	26	2	94	30	1	943	288	37	1096	344	40
Missing	353	114	16	259	118	18	24	10	2	636	242	36
Total cholesterol, mmol/L												
N	1,859	875	111	1,898	941	154	2,454	1,364	203	6,211	3,180	468
Mean (SD)	5.0 (1.5)	5.3 (1.5)	5.5 (1.5)	5.0 (1.5)	5.4 (1.4)	5.7 (1.6)	4.9 (1.4)	5.3 (1.4)	5.4 (1.3)	5.0 (1.4)	5.4 (1.4)	5.5 (1.5)
Median (min, max)	4.8 (2.0, 14.6)	5.2 (2.0, 17.0)	5.3 (2.6, 12.1)	4.8 (2.0, 12.5)	5.4 (2.0, 12.2)	5.7 (2.3, 14.0)	4.8 (2.0, 16.9)	5.3 (2.1, 12.2)	5.4 (2.2, 10.5)	4.8 (2.0, 16.9)	5.3 (2.0, 17.0)	5.4 (2.2, 14.0)
IQR	1.8	1.8	1.7	1.8	1.9	2.2	1.9	1.8	1.9	1.8	1.8	1.9
Not Done	556 (23.0)	185 (17.4)	27 (19.6)	761 (28.6)	245 (20.6)	29 (15.8)	817 (25.0)	279 (17.0)	34 (14.4)	2,134 (25.6)	709 (18.2)	90 (16.2)
Missing	132	46	7	138	73	19	359	214	21	629	333	47
HDL-C, mmol/L												
N	1,790	850	101	1,836	914	145	2,406	1,328	197	6,032	3,092	443
Mean (SD)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.4)	1.1 (0.3)	1.1 (0.3)	1.1 (0.4)	1.1 (0.3)	1.0 (0.3)	1.1 (0.4)	1.1 (0.3)	1.1 (0.3)
Median (min, max)	1.1 (0.5, 4.6)	1.0 (0.5, 4.9)	1.0 (0.5, 2.1)	1.0 (0.5, 4.4)	1.0 (0.5, 3.6)	1.0 (0.5, 3.3)	1.0 (0.5, 4.6)	1.0 (0.5, 4.6)	1.0 (0.5, 4.1)	1.0 (0.5, 4.6)	1.0 (0.5, 4.9)	1.0 (0.5, 4.1)
IQR	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4
Not Done	589 (24.8)	205 (19.4)	38 (27.4)	783 (29.8)	253 (21.6)	40 (21.6)	865 (26.4)	306 (18.8)	37 (15.8)	2,237 (27.0)	764 (19.8)	115 (20.6)
Missing	168	51	6	178	92	17	359	223	24	705	366	47

Year	2011			2012			2013			2011-2013		
Hypertension status	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown
Total	**2,547**	**1,106**	**145**	**2,797**	**1,259**	**202**	**3,630**	**1,857**	**258**	**8,974**	**4,222**	**605**
LDL–C, mmol/L												
N	1828	860	101	1869	934	147	2,367	1,308	194	6,064	3,102	442
Mean (SD)	3.1 (1.3)	3.5 (1.3)	3.7 (1.5)	3.1 (1.3)	3.6 (1.3)	3.8 (1.5)	3.1 (1.2)	3.4 (1.2)	3.6 (1.2)	3.1 (1.3)	3.5 (1.3)	3.7 (1.4)
Median (min, max)	3.0 (0.5, 10.0)	3.4 (0.6, 12.0)	3.4 (0.7, 10.1)	3.0 (0.6, 11.9)	3.5 (0.6, 8.7)	3.9 (0.9, 12.2)	2.9 (0.5, 12.3)	3.4 (0.6, 10.2)	3.6 (1.0, 9.0)	2.9 (0.5, 12.3)	3.4 (0.6, 12.0)	3.6 (0.7, 12.2)
IQR	1.6	1.6	1.6	1.7	1.7	2.0	1.6	1.5	1.6	1.6	1.7	1.7
Not Done	590 (24.4)	208 (19.4)	37 (26.8)	790 (29.8)	260 (21.8)	41 (21.8)	914 (27.8)	331 (20.2)	43 (18.2)	2,294 (27.4)	799 (20.4)	121 (21.4)
Missing	129	38	7	138	65	14	349	218	21	616	321	42
Triglycerides, mmol/L												
N	1,863	870	113	1,897	942	153	2,411	1,335	195	6,171	3,147	461
Mean (SD)	1.7 (1.1)	1.7 (1.1)	1.7 (0.8)	1.7 (1.1)	1.7 (1.0)	1.8 (1.1)	1.7 (1.0)	1.8 (1.3)	1.8 (1.4)	1.7 (1.1)	1.8 (1.2)	1.8 (1.2)
Median (min, max)	1.5 (0.5, 15.0)	1.4 (0.5, 12.0)	1.5 (0.6, 5.7)	1.4 (0.5, 13.9)	1.5 (0.6, 13.0)	1.6 (0.6, 7.6)	1.5 (0.5, 13.1)	1.5 (0.5, 14.6)	1.5 (0.5, 15.0)	1.5 (0.5, 15.0)	1.5 (0.5, 14.6)	1.5 (0.5, 15.0)
IQR	0.9	0.9	0.9	0.9	0.9	1.0	0.9	1.0	0.9	0.9	1.0	0.9
Not Done	551 (22.8)	190 (18.0)	26 (18.8)	759 (28.6)	241 (20.4)	31 (16.8)	853 (26.2)	303 (18.4)	39 (16.6)	2163 (26.0)	734 (19.0)	96 (17.2)
Missing	133	46	6	141	76	18	366	219	24	640	341	48
* HbA1c, mmol/L												
N							660	240	30	660	240	30
Mean (SD)							7.7 (2.3)	7.7 (3.3)	7.9 (4.6)	7.7 (2.3)	7.7 (3.3)	7.9 (4.6)
Median (min, max)							7.2 (4.2, 16.5)	6.4 (4.3, 32.0)	6.1 (5.4, 30.0)	7.2 (4.2, 16.5)	6.4 (4.3, 32.0)	6.1 (5.4, 30.0)
IQR							2.9	3.1	2.9	2.9	3.1	2.9
Not done							1,904 (74.2)	991 (80.6)	134 (81.8)	1,904 (74.2)	991 (80.6)	134 (81.8)
Missing							1066	626	94	1066	626	94

Year	2011			2012			2013			2011-2013		
Hypertension status	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown
Total	**2,547**	**1,106**	**145**	**2,797**	**1,259**	**202**	**3,630**	**1,857**	**2,58**	**8,974**	**4,222**	**605**
Left ventricular ejection fraction, %												
N	1,195	538	74	1,282	588	94	1,515	795	123	3,992	1,921	291
Mean (SD)	46.0 (14.2)	46.8 (13.0)	45.4 (14.1)	46.4 (13.3)	46.4 (12.5)	47.7 (13.9)	47.0 (13.1)	47.1 (12.5)	47.3 (14.0)	46.5 (13.5)	46.8 (12.6)	47.0 (14.0)
Median (min, max)	46.0 (6.4, 88.0)	46.0 (6.3, 80.0)	45.5 (15.0, 79.0)	47.0 (5.3, 85.0)	46.0 (15.0, 85.0)	47.0 (7.2, 79.0)	47.0 (6.8, 87.0)	47.0 (6.6, 89.0)	50.0 (13.0, 76.0)	47.0 (5.3, 88.0)	46.0 (6.3, 89.0)	48.0 (7.2, 79.0)
IQR	20.0	16.0	20.0	19.0	17.0	17.0	15.3	15.0	21.0	18.0	15.0	20.0
Not Done	982 (45.2)	430 (44.4)	57 (43.6)	1,217 (48.6)	494 (45.6)	76 (44.8)	1,547 (50.6)	718 (47.4)	102 (45.4)	3,746 (48.4)	1,642 (46.0)	235 (44.6)
Missing	370	138	14	298	177	32	568	344	33	1236	659	79
ECG, No. (%)												
Inferior leads	766 (30.0)	397 (35.8)	55 (38.0)	865 (31.0)	460 (36.6)	73 (36.2)	1,148 (31.6)	697 (37.6)	106 (41.0)	2,779 (31.0)	1,554 (36.8)	234 (38.6)
Anterior leads	994 (39.0)	498 (45.0)	80 (55.2)	1,115 (39.8)	583 (46.4)	95 (47.0)	1,433 (39.4)	810 (43.6)	121 (46.8)	3,542 (39.4)	1,891 (44.8)	296 (49.0)
Lateral leads	678 (26.6)	260 (23.6)	34 (23.4)	759 (27.2)	274 (21.8)	42 (20.8)	1,085 (29.8)	397 (21.4)	57 (22.0)	2,522 (28.2)	931 (22.0)	133 (22.0)
True posterior	107 (4.2)	74 (6.6)	7 (4.8)	82 (3.0)	61 (4.8)	14 (7.0)	145 (4.0)	85 (4.6)	17 (6.6)	334 (3.8)	220 (5.2)	38 (6.2)
Right ventricle	61 (2.4)	30 (2.8)	7 (4.8)	75 (2.6)	45 (3.6)	8 (4.0)	94 (2.6)	89 (4.8)	20 (7.8)	230 (2.6)	164 (3.8)	35 (5.8)
None	327 (12.8)	95 (8.6)	5 (3.4)	341 (12.2)	103 (8.2)	17 (8.4)	580 (16.0)	267 (14.4)	15 (5.8)	1,248 (14.0)	465 (11.0)	37 (6.2)
Not stated/ inadequately described	218 (8.6)	71 (6.4)	4 (2.8)	181 (6.4)	46 (3.6)	14 (7.0)	201 (5.6)	55 (3.0)	3 (1.2)	600 (6.6)	172 (4.0)	21 (3.4)

Year	2011			2012			2013			2011-2013		
Hypertension status	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown	Hypertensive	Non-Hypertensive	Unknown
Total	**2,547**	**1,106**	**145**	**2,797**	**1,259**	**202**	**3,630**	**1,857**	**258**	**8,974**	**4,222**	**605**
Total number of STEMI patients who were given fibrinolytic therapy at this centre	586	398	62	542	393	74	703	524	93	1,831	1,315	229
Pain to needle time, min (** symptom to treatment)												
N	418	280	48	369	256	47	483	392	68	1,270	928	163
Mean (SD)	221.0 (173.5)	215.2 (183.3)	251.6 (191.6)	270.7 (216.7)	260.0 (220.4)	232.3 (149.2)	259.4 (215.0)	259.9 (210.9)	290.6 (267.0)	250.1 (203.7)	246.4 (206.6)	262.3 (217.0)
Median (min, max)	160.0 (10.0, 1,080.0)	150.0 (30.0, 1,315.0)	172.5 (60.0, 1,055.0)	210.0 (15.0, 1,439.0)	195.0 (4.0, 1,140.0)	200.0 (70.0, 800.0)	195.0 (10.0, 1,290.0)	195.0 (10.0, 1,375.0)	197.5 (20.0, 1,222.0)	190.0 (10.0, 1,439.0)	180.0 (4.0, 1,375.0)	195.0 (20.0, 1,222.0)
IQR	190.0	167.5	207.5	200.0	192.5	160.0	200.0	170.0	212.5	200.0	180.0	195.0
Missing	168	118	14	173	137	27	220	132	25	561	387	66

Definition is different in CRF version 2013
** Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy*
Note: Not all participating centre performed Troponin T or Troponin 1 tests
Note: Percentage is to the nearest decimal point

Table 3.6 Cardiac presentation of patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	1,459	1,785	472	1,538	2,165	513	2,103	2,970	608	5,100	6,920	1,593
ACS stratum, No. (%)												
STEMI	587 (40.2)	965 (54.0)	293 (62.0)	585 (38.0)	1,210 (55.8)	340 (66.3)	755 (36.0)	1,559 (52.4)	420 (69.0)	1,927 (37.8)	3,734 (54.0)	1,053 (66.1)
NSTEMI	469 (32.2)	443 (24.8)	98 (20.8)	455 (29.6)	508 (23.5)	109 (21.3)	628 (29.8)	818 (27.6)	92 (15.2)	1,552 (30.4)	1,769 (25.6)	299 (18.7)
UA	403 (27.6)	377 (21.2)	81 (17.2)	498 (32.4)	447 (20.7)	64 (12.4)	720 (34.2)	593 (20.0)	96 (15.8)	1,621 (31.8)	1,417 (20.4)	241 (15.2)
Systolic blood pressure, mmHg												
N	1311	1685	465	1447	2072	504	1989	2812	600	4747	6569	1569
Mean (SD)	139.6 (27.4)	137.3 (28.3)	135.8 (29.8)	138.3 (29.1)	136.7 (29.9)	135.0 (30.7)	140.5 (29.3)	136.4 (29.8)	134.3 (30.5)	139.6 (28.7)	136.7 (29.5)	134.9 (30.3)
Median (min, max)	137.0 (60.0, 270.0)	136.0 (50.0, 267.0)	133.0 (59.0, 245.0)	135.0 (54.0, 270.0)	134.0 (53.0, 261.0)	132.0 (56.0, 240.0)	139.0 (52.0, 260.0)	134.0 (53.0, 268.0)	133.0 (55.0, 239.0)	137.0 (52.0, 270.0)	135.0 (50.0, 268.0)	133.0 (55.0, 245.0)
IQR	36.0	37.0	38.0	37.0	37.0	39.0	37.0	36.0	36.0	37.0	37.0	38.0
Missing	148	100	7	91	93	9	114	158	8	353	351	24
Diastolic blood pressure, mmHg												
N	1309	1682	465	1439	2065	501	1987	2809	599	4735	6556	1565
Mean (SD)	81.3 (17.1)	80.8 (17.9)	80.3 (19.0)	79.5 (17.0)	80.7 (19.2)	80.0 (18.5)	81.5 (17.7)	80.5 (18.9)	79.9 (18.9)	80.8 (17.4)	80.6 (18.7)	80.1 (18.8)
Median (min, max)	80.0 (10.0, 170.0)	80.0 (22.0, 162.0)	80.0 (25.0, 148.0)	78.0 (17.0, 158.0)	80.0 (11.0, 170.0)	80.0 (31.0, 148.0)	80.0 (23.0, 170.0)	79.0 (10.0, 160.0)	78.0 (10.0, 160.0)	80.0 (10.0, 170.0)	80.0 (10.0, 170.0)	79.0 (10.0, 160.0)
IQR	21.0	22.0	25.0	21.0	24.0	23.0	22.0	23.0	22.0	21.0	23.5	23.0
Missing	150	103	7	99	100	12	116	161	9	365	364	28

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	**1,459**	**1,785**	**472**	**1,538**	**2,165**	**513**	**2,103**	**2,970**	**608**	**5,100**	**6,920**	**1,593**
Pulse pressure, mmHg												
N	1,308	1,675	465	1,438	2,059	500	1,980	2,806	596	4,726	6,540	1,561
Mean (SD)	58.3 (20.3)	56.7 (19.6)	55.6 (20.0)	58.6 (21.0)	56.1 (20.3)	54.9 (20.7)	59.1 (21.1)	56.0 (20.1)	54.5 (20.0)	58.8 (20.9)	56.2 (20.0)	55.0 (20.2)
Median (min, max)	56.0 (5.0, 154.0)	54.0 (4.0, 156.0)	52.0 (11.0, 140.0)	55.0 (5.0, 165.0)	53.0 (3.0, 198.0)	51.0 (11.0, 167.0)	57.0 (7.0, 169.0)	53.0 (1.0, 159.0)	52.0 (1.0, 137.0)	56.0 (5.0, 169.0)	53.0 (1.0, 198.0)	51.0 (1.0, 167.0)
IQR	27.0	25.0	25.0	28.0	26.0	25.0	27.0	25.0	25.0	27.0	26.0	25.0
Missing	151	110	7	100	106	13	123	164	12	374	380	32
Heart rate at presentation, beats/min												
N	1,306	1,691	464	1,436	2,054	502	1,975	2,789	597	4,717	6,534	1,563
Mean (SD)	83.1 (19.6)	83.3 (20.7)	82.4 (21.3)	82.6 (20.6)	83.8 (21.7)	84.3 (22.0)	82.9 (20.2)	83.8 (20.9)	85.2 (24.7)	82.9 (20.1)	83.7 (21.1)	84.1 (22.9)
Median (min, max)	81.0 (36.0, 194.0)	82.0 (25.0, 188.0)	80.0 (30.0, 166.0)	80.0 (30.0, 195.0)	82.0 (20.0, 200.0)	84.0 (28.0, 190.0)	80.0 (30.0, 195.0)	81.0 (30.0, 192.0)	83.0 (30.0, 198.0)	80.0 (30.0, 195.0)	82.0 (20.0, 200.0)	82.0 (28.0, 198.0)
IQR	25.0	27.0	28.0	26.0	28.0	28.0	26.0	28.0	29.0	26.0	27.0	29.0
Missing	153	94	8	102	111	11	128	181	11	383	386	30
Episodes of angina in past 24 hours, No. (%)												
0-2	434 (33.2)	694 (42.8)	183 (40.6)	592 (41.4)	916 (45.7)	193 (40.0)	872 (47.4)	1,233 (46.8)	188 (33.0)	1,898 (41.5)	2,843 (45.4)	564 (37.5)
>2	57 (4.4)	59 (3.6)	12 (2.6)	54 (3.8)	50 (2.5)	15 (3.1)	75 (4.0)	73 (2.8)	13 (2.2)	186 (4.0)	182 (3.0)	40 (2.7)
Not Available	818 (62.4)	867 (53.6)	256 (56.8)	785 (54.8)	1,042 (51.8)	275 (56.9)	892 (48.6)	1,327 (50.4)	370 (64.8)	2,495 (54.5)	3,236 (51.6)	901 (59.8)
Missing	150	165	21	107	157	30	264	337	37	521	659	88

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	**1,459**	**1,785**	**472**	**1,538**	**2,165**	**513**	**2,103**	**2,970**	**608**	**5,100**	**6,920**	**1,593**
Killip classification code, No. (%)												
I	605 (50.2)	844 (54.2)	196 (48.0)	527 (39.6)	922 (48.0)	200 (43.5)	1,022 (68.0)	1,523 (64.6)	300 (56.8)	2,154 (53.3)	3,289 (56.5)	696 (49.8)
II	162 (13.4)	262 (16.8)	59 (14.4)	212 (15.8)	335 (17.4)	73 (16.0)	259 (17.2)	400 (17.0)	91 (17.2)	633 (15.6)	997 (17.0)	223 (16.0)
III	53 (4.4)	49 (3.2)	16 (4.0)	61 (4.6)	58 (3.0)	19 (4.2)	81 (5.4)	119 (5.0)	22 (4.2)	195 (4.8)	226 (3.8)	57 (4.0)
IV	70 (5.8)	85 (5.4)	40 (9.8)	94 (7.0)	168 (8.8)	54 (11.8)	118 (7.8)	273 (11.6)	94 (17.8)	282 (7.0)	526 (9.0)	188 (13.5)
Not stated/ inadequately described	317 (26.2)	318 (20.4)	97 (23.8)	440 (33.0)	439 (22.8)	113 (24.5)	23 (1.6)	42 (1.8)	21 (4.0)	780 (19.3)	799 (13.7)	231 (16.7)
Not Available	36	39	10	61	58	6	581	603	75	678	700	91
Missing	216	188	54	143	185	48	19	10	5	378	383	107
Total cholesterol, mmol/L												
N	1,094	1,347	338	1,015	1,574	372	1,451	2,078	447	3,560	4,999	1,157
Mean (SD)	5.0 (1.5)	5.1 (1.4)	5.3 (1.6)	5.1 (1.5)	5.2 (1.4)	5.5 (1.6)	5.0 (1.5)	5.1 (1.4)	5.4 (1.4)	5.0 (1.5)	5.1 (1.4)	5.4 (1.5)
Median (min, max)	4.9 (2.0, 14.6)	5.0 (2.0, 17.0)	5.2 (2.3, 12.1)	4.9 (2.0, 12.3)	5.0 (2.0, 12.2)	5.4 (2.3, 14.0)	4.9 (2.0, 16.9)	5.0 (2.0, 12.9)	5.3 (2.2, 10.0)	4.9 (2.0, 16.9)	5.0 (2.0, 17.0)	5.3 (2.2, 14.0)
IQR	1.9	1.7	1.9	2.0	1.9	2.1	2.0	1.8	1.8	1.9	1.8	2.0
Not Done	296 (21.2)	361 (21.2)	101 (23.0)	450 (30.8)	493 (23.8)	90 (19.4)	457 (24.0)	570 (21.6)	100 (18.2)	1203 (25.2)	1424 (22.2)	291 (20.0)
Missing	69	77	33	73	98	51	195	322	61	337	497	145
HDL–C, mmol/L												
N	1,063	1,309	304	990	1,531	344	1,417	2,036	430	3,470	4,876	1,078
Mean (SD)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)	1.1 (0.4)	1.1 (0.4)	1.1 (0.3)
Median (min, max)	1.1 (0.5, 4.3)	1.0 (0.5, 4.9)	1.0 (0.5, 3.3)	1.0 (0.5, 4.4)	1.0 (0.5, 3.9)	1.0 (0.5, 3.3)	1.0 (0.5, 4.6)	1.0 (0.5, 4.6)	1.0 (0.5, 3.0)	1.0 (0.5, 4.6)	1.0 (0.5, 4.9)	1.0 (0.5, 3.3)
IQR	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Not Done	306 (22.4)	382 (22.6)	135 (30.8)	459 (31.6)	502 (24.6)	112 (24.6)	480 (25.4)	613 (23.2)	112 (20.6)	1,245 (26.4)	1,497 (23.4)	359 (25.0)
Missing	90	94	33	89	132	57	206	321	66	385	547	156

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	1,459	1,785	472	1,538	2,165	513	2,103	2,970	608	5,100	6,920	1,593
LDL–C, mmol/L												
N	1,088	1,331	306	1,003	1,568	349	1,394	2,002	430	3,485	4,901	1,085
Mean (SD)	3.1 (1.3)	3.3 (1.3)	3.5 (1.4)	3.2 (1.4)	3.3 (1.3)	3.7 (1.4)	3.1 (1.3)	3.2 (1.2)	3.5 (1.2)	3.2 (1.3)	3.3 (1.3)	3.5 (1.3)
Median (min, max)	3.0 (0.6, 10.0)	3.2 (0.5, 12.0)	3.3 (0.7, 10.1)	3.1 (0.6, 11.9)	3.2 (0.6, 9.2)	3.5 (0.9, 12.2)	3.0 (0.5, 12.3)	3.1 (0.5, 9.2)	3.5 (0.8, 7.2)	3.0 (0.5, 12.3)	3.2 (0.5, 12.0)	3.4 (0.7, 12.2)
IQR	1.7	1.6	1.7	1.8	1.8	2	1.7	1.6	1.7	1.7	1.6	1.8
Not Done	306 (22.0)	383 (22.4)	136 (30.8)	465 (31.6)	509 (24.6)	114 (24.6)	513 (27.0)	653 (24.6)	118 (21.6)	1,284 (27.0)	1,545 (24.0)	368 (25.4)
Missing	65	71	30	70	88	50	196	315	60	331	474	140
Triglycerides, mmol/L												
N	1,094	1,345	342	1,017	1,575	368	1,422	2,036	437	3,533	4,956	1,147
Mean (SD)	1.7 (1.1)	1.7 (1.1)	1.7 (1.0)	1.8 (1.2)	1.7 (1.0)	1.7 (1.0)	1.8 (1.1)	1.7 (1.1)	1.8 (1.1)	1.8 (1.1)	1.7 (1.1)	1.7 (1.1)
Median (min, max)	1.5 (0.5, 15.0)	1.4 (0.5, 12.0)	1.5 (0.5, 9.6)	1.5 (0.5, 13.9)	1.4 (0.5, 13.0)	1.5 (0.5, 8.0)	1.5 (0.5, 15.0)	1.4 (0.5, 14.5)	1.5 (0.5, 14.6)	1.5 (0.5, 15.0)	1.4 (0.5, 14.5)	1.5 (0.5, 14.6)
IQR	0.9	1.0	0.9	1.0	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.9
Not Done	295 (21.2)	361 (21.2)	101 (22.8)	447 (30.6)	490 (23.8)	92 (20.0)	480 (25.2)	604 (22.8)	107 (19.6)	1,222 (25.6)	1,455 (22.6)	300 (20.8)
Missing	70	79	29	74	100	53	201	330	64	345	509	146
* HbA1c, mmol/L												
N							406	428	81	406	428	81
Mean (SD)							7.6 (2.2)	7.9 (2.9)	7.6 (3.4)	7.6 (2.2)	7.9 (2.9)	7.6 (3.4)
Median (min, max)							7.0 (4.3, 16.5)	6.9 (4.2, 32.0)	6.6 (4.2, 30.0)	7.0 (4.3, 16.5)	6.9 (4.2, 32.0)	6.6 (4.2, 30.0)
IQR							2.7	3.5	2.9	2.7	3.5	2.9
Not done							1,096 (73.0)	1,615 (79.0)	300 (78.8)	1,096 (73.0)	1,615 (79.0)	300 (78.8)
Missing							601	927	227	601	927	227

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	**1,459**	**1,785**	**472**	**1,538**	**2,165**	**513**	**2,103**	**2,970**	**608**	**5,100**	**6,920**	**1,593**
Left ventricular ejection fraction, %												
N	651	870	237	712	992	241	872	1,223	302	2,235	3,085	780
Mean (SD)	46.6 (14.1)	45.9 (13.5)	45.9 (14.5)	47.1 (13.3)	45.9 (12.6)	46.9 (13.9)	47.0 (13.2)	46.9 (12.4)	47.6 (13.9)	46.9 (13.5)	46.3 (12.8)	46.9 (14.1)
Median (min, max)	47.0 (10.0, 88.0)	46.0 (6.3, 83.0)	45.0 (10.0, 81.0)	49.0 (5.3, 83.0)	45.0 (7.2, 80.0)	47.0 (7.2, 85.0)	48.0 (8.2, 83.0)	46.0 (6.6, 89.0)	49.0 (13.0, 88.0)	48.0 (5.3, 88.0)	46.0 (6.3, 89.0)	48.0 (7.2, 88.0)
IQR	22.0	18.0	18.0	18.0	18.0	19.0	17.0	15.0	16.0	19.0	17.0	18.0
Not Done	613 (48.4)	661 (43.2)	182 (43.4)	680 (48.8)	912 (47.8)	190 (44.0)	890 (50.6)	1234 (50.2)	228 (43.0)	2,183 (49.4)	2,807 (47.6)	600 (43.4)
Missing	195	254	53	146	261	82	341	513	78	682	1028	213
ECG, No. (%)												
Inferior leads	417 (28.6)	619 (34.6)	161 (34.2)	458 (29.8)	738 (34.0)	190 (37.0)	646 (30.8)	1031 (34.8)	245 (40.2)	1,521 (29.8)	2,388 (34.6)	596 (37.4)
Anterior leads	533 (36.6)	774 (43.4)	230 (48.8)	607 (39.4)	945 (43.6)	232 (45.2)	780 (37.0)	1273 (42.8)	282 (46.4)	1,920 (37.6)	2,992 (43.2)	744 (46.8)
Lateral leads	360 (24.6)	476 (26.6)	116 (24.6)	404 (26.2)	543 (25.0)	121 (23.6)	576 (27.4)	784 (26.4)	157 (25.8)	1,340 (26.2)	1,803 (26.0)	394 (24.8)
True posterior	58 (4.0)	98 (5.4)	27 (5.8)	35 (2.2)	84 (3.8)	37 (7.2)	76 (3.6)	124 (4.2)	45 (7.4)	169 (3.4)	306 (4.4)	109 (6.8)
Right ventricle	20 (1.4)	53 (3.0)	22 (4.6)	30 (2.0)	72 (3.4)	26 (5.0)	49 (2.4)	114 (3.8)	37 (6.0)	99 (2.0)	239 (3.4)	85 (5.4)
None	186 (12.8)	204 (11.4)	29 (6.2)	210 (13.6)	211 (9.8)	34 (6.6)	413 (19.6)	415 (14.0)	37 (6.0)	809 (15.8)	830 (12.0)	100 (6.2)
Not stated/ inadequately described	158 (10.8)	93 (5.2)	35 (7.4)	109 (7.0)	100 (4.6)	30 (5.8)	125 (6.0)	116 (4.0)	16 (2.6)	392 (7.6)	309 (4.4)	81 (5.0)

Year	2011			2012			2013			2011-2013		
Dyslipidaemia status	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown	Dyslipidaemia	Non-Dyslipidaemia	Unknown
Total	**1,459**	**1,785**	**472**	**1,538**	**2,165**	**513**	**2,103**	**2,970**	**608**	**5,100**	**6,920**	**1,593**
Total number of STEMI patients who were given fibrinolytic therapy at this centre	323	515	180	265	558	176	341	748	211	929	1,821	567
Pain to needle time, min (* symptom to treatment)												
N	251	347	128	176	366	123	243	549	142	670	1,262	393
Mean (SD)	193.0 (151.4)	229.1 (190.3)	249.3 (190.7)	273.9 (229.5)	261.0 (216.0)	262.2 (190.4)	269.7 (214.0)	257.4 (208.0)	259.2 (247.1)	242.0 (200.9)	250.6 (205.9)	256.9 (212.3)
Median (min, max)	135.0 (15.0, 915.0)	165.0 (10.0, 1,315.0)	182.5 (20.0, 1,055.0)	222.5 (20.0, 1,439.0)	205.0 (4.0, 1,140.0)	210.0 (40.0, 990.0)	195.0 (10.0, 973.0)	200.0 (10.0, 1,375.0)	170.0 (20.0, 1,290.0)	180.0 (10.0, 1,439.0)	190.0 (4.0, 1,375.0)	180.0 (20.0, 1,290.0)
IQR	145.0	180.0	197.5	207.5	205.0	162.0	220.0	175.0	190.0	195.0	188.0	190.0
Missing	72	168	52	89	192	53	98	199	69	259	559	174

*Definition is different in CRF version 2013
**Symptom to treatment is time difference between time ACS symptom onset and time patient were given fibrinolytic therapy
Note: Not all participating centre performed Troponin T or Troponin I tests
Note: Percentage is to the nearest decimal point

Table 3.7 TIMI risk score of patients with ACS by ACS Stratum, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
ACS Stratum	STEMI	NSTEMI/UA	STEMI	NSTEMI/UA	STEMI	NSTEMI/UA	STEMI	NSTEMI/UA
Total	2,055	1,992	2,386	2,203	3,061	3,066	7,502	7,261
TIMI Risk Score, No. (%)								
0	29 (1.4)	157 (7.9)	29 (1.2)	210 (9.6)	50 (1.6)	330 (10.8)	108 (1.4)	697 (9.6)
1	171 (8.4)	456 (22.8)	258 (10.8)	508 (23.0)	330 (10.7)	633 (20.6)	759 (10.3)	1,597 (22.0)
2	386 (18.8)	515 (25.8)	409 (17.3)	599 (27.2)	579 (19.0)	841 (27.4)	1,374 (18.4)	1,955 (27.0)
3	337 (16.4)	490 (24.7)	419 (17.6)	521 (23.6)	459 (15.0)	723 (23.6)	1,215 (16.3)	1,734 (23.8)
4	269 (13.0)	257 (13.0)	365 (15.3)	278 (12.6)	437 (14.2)	373 (12.2)	1,071 (14.2)	908 (12.6)
5	361 (17.6)	92 (4.6)	310 (13.0)	73 (3.4)	459 (15.0)	141 (4.6)	1,130 (15.0)	306 (4.2)
6	176 (8.6)	24 (1.2)	206 (8.6)	13 (0.6)	269 (8.8)	21 (0.6)	651 (8.6)	58 (0.8)
7	147 (7.2)	1 (0.0)	169 (7.0)	1 (0.0)	225 (7.4)	4 (0.2)	541 (7.3)	6 (0.0)
8	91 (4.4)		90 (3.8)		103 (3.4)		284 (3.8)	
9	54 (2.6)		60 (2.6)		72 (2.4)		186 (2.5)	
10	21 (1.0)		52 (2.2)		54 (1.7)		127 (1.6)	
11	10 (0.4)		11 (0.4)		13 (0.4)		34 (0.4)	
12	3 (0.2)		6 (0.2)		10 (0.4)		19 (0.2)	
13	0 (0)		2 (0.0)		1 (0.0)		3 (0.0)	

CHAPTER 4: TREATMENT

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Summary

1. Similar length of admission in CCU/ICU was observed in all ACS spectrums and age groups.

2. Following STEMI, 75% received fibrinolytic therapy and 9.4% were treated with primary PCI.

3. The median door to needle time (DTN) was 45 minutes, slightly better than previous cohort (2006-2010). 39.2 % achieved the recommended DTN of 30 minutes.

4. The median door to balloon time (DTB) was 111 minutes, slight better than the previous cohort (2006-2010) which was 117 minutes. 38.0% achieved the recommended DTB time of 90 minutes.

5. In NSTEMI/UA, male and younger patients underwent more PCI compared to female and elderly patients.

6. There was improvement in prescription of aspirin (more than 95%) and statins (about 92%) compared to the previous cohort (2006-2010). However, the usage of beta blockers and ACE inhibitors remain the same.

Pattern of admission
The total number of days of admission was almost similar in all ACS spectrums. The median of total number of days of admission was five days in STEMI and NSTEMI and four days in UA. [Table 4.1] The total number of days of admission were similar in all age group (young, middle and elderly). [Table 4.2 & 4.6] There was also no difference in the number of days spent in hospital in all three ethnic groups (Malay, Chinese and Indian) admitted with ACS. [Table 4.4 & 4.8]

The number of days spent in CCU or ICU was similar in the entire ACS spectrum. [Table 4.2] Patients spent a median of three to four days in CCU/ICU. The number of days spent in CCU/ICU increased with age group and this was observed in all ACS spectrums. [Table 4.2 & 4.6] There was no significant difference in the number of days spent in CCU/ICU between all three ethnic groups and also gender. [Table 4.3, 4.4, 4.7 & 4.8]

Pharmacological Therapy
For all ACS (STEMI, NSTEMI and UA) admissions, more than 94% patients received aspirin and more than 90% patients received statins. [Table 4.1] The use of aspirin in ACS spectrum patients from 2011 to 2013 was higher than previously documented in the 2006 – 2010 NCVD-ACS Registry. There was no difference in the use of aspirin, ADP antagonist and statins in different age groups, gender and ethnic groups. [Table 4.2, 4.3 & 4.4]

There was a major change in prescription trend from LMWH to Fondaparinux in ACS spectrum following the introduction of Fondaparinux to the Malaysian market in 2013. [Table 4.1] Compared to

the previous 2006-2010 NCVD-ACS Registry, there was no difference in usage of beta blockers and ACE inhibitors and the use of these medications remained low. [Table 4.1] Younger patients (young and middle age) were more likely to receive beta blockers compared to the elderly. [Table 4.2] More Indians were on oral hypoglycaemic agents and insulin for diabetes mellitus as compared to Malays and Chinese. [Table 4.4]

Revascularisation

For STEMI patients, 75% of them received fibrinolytic therapy and 9.4% proceeded directly to primary PCI, whereas 11.3% had missed-fibrinolytic. The percentage of patients who missed fibrinolytic seemed to be higher in the elderly as compared to young patients (13% vs. 9.5% respectively). Another 3.9% of STEMI patients did not receive fibrinolytic therapy because of contraindications.

During the same admission, 33.4% STEMI patients underwent PCI, and only 1% underwent CABG. The young patients had higher percentage of PCI as compared to elderly patients (38.2% vs. 29.8%) during the index admission. [Table 4.2] As for the gender comparison, more male patients underwent cardiac catheterisation, primary PCI and PCI compared to female patients. [Table 4.3] Among the ethnic groups, more Indian patients underwent primary PCI, whereas more Chinese patients underwent cardiac catheterisation and PCI during index admission.

Median door-to-needle (DTN) time was 45 minutes and 39.2% achieved DTN of less than 30 minutes. [Table 4.5] There was an improvement in the median DTN over the years as we compared this to the previous report; 45 minutes in 2011-2013 and 50 minutes in 2006-2010. Much effort still needs to be done to achieve the DNT benchmark of 30 minutes.

The median door-to-balloon (DTB) time was 111 minutes and 38.0% achieved DTB time of less than 90 minutes. [Table 4.5]

Among NSTEMI/UA patients, the percentage of patients underwent PCI was higher in young patients (21.8%) as compared to elderly patients (14.4%). [Table 4.6] The opposite trend was observed for CABG (0.4% in younger cohort vs. 2.0% in elderly cohort). More male patients underwent cardiac catheterisation, PCI and CABG compared to female.

Table 4.1 Summary of treatments for patients with ACS by ACS stratum, NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
#^Total admission days												
N	2,022	1,074	891	2,300	1,109	1,052	3,000	1,583	1,450	7,322	3,766	3,393
Mean (SD)	6.4 (5.9)	6.6 (7.5)	5.4 (7.1)	6.1 (6.3)	7.1 (8.4)	5.1 (4.7)	6.5 (7.0)	7.2 (8.2)	5.3 (6.1)	6.4 (6.5)	7.0 (8.0)	5.3 (6.0)
Median (min, max)	5.0 (1.0, 94.0)	4.0 (1.0, 96.0)	4.0 (1.0, 89.0)	5.0 (1.0, 97.0)	5.0 (1.0, 100.0)	4.0 (1.0, 64.0)	5.0 (1.0, 98.0)	5.0 (1.0, 100.0)	4.0 (1.0, 95.0)	5.0 (1.0, 98.0)	5.0 (1.0, 100.0)	4.0 (1.0, 95.0)
IQR	3.0	4.0	2.0	2.0	5.0	2.0	2.0	4.0	2.0	2.0	4.0	2.0
Missing	33	20	7	86	37	5	61	19	14	180	76	26
Number of days on CCU												
N	1,276	294	81	1,525	337	133	1,892	344	120	4,693	975	334
Mean (SD)	3.5 (2.8)	3.7 (3.0)	3.8 (3.7)	3.4 (2.9)	3.7 (3.7)	3.2 (2.7)	3.4 (3.0)	3.8 (3.8)	3.2 (2.6)	3.4 (2.9)	3.7 (3.5)	3.3 (2.9)
Median (min, max)	3.0 (1.0, 30.0)	3.0 (1.0, 20.0)	3.0 (1.0, 23.0)	3.0 (1.0, 27.0)	3.0 (1.0, 24.0)	2.0 (1.0, 17.0)	3.0 (1.0, 28.0)	3.0 (1.0, 30.0)	2.0 (1.0, 15.0)	3.0 (1.0, 30.0)	3.0 (1.0, 30.0)	3.0 (1.0, 23.0)
IQR	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
No admission to CCU	776	799	817	856	806	924	1164	1256	1344	2796	2861	3085
Missing	3	1	0	5	3	0	5	2	0	13	6	0
Number of days on ICU/CICU												
N	25	6	1	9	8	5	46	25	16	80	39	22
Mean (SD)	2.8 (1.7)	5.3 (4.7)	13.0 (.)	5.7 (6.7)	6.3 (6.9)	4.0 (1.9)	3.1 (2.5)	6.2 (6.0)	4.3 (2.4)	3.3 (3.1)	6.1 (5.9)	4.6 (2.9)
Median (min, max)	2.0 (1.0, 7.0)	4.5 (1.0, 12.0)	13.0 (13.0, 13.0)	4.0 (1.0, 23.0)	3.5 (1.0, 21.0)	4.0 (2.0, 7.0)	2.5 (1.0, 16.0)	4.0 (1.0, 26.0)	3.5 (1.0, 10.0)	3.0 (1.0, 23.0)	4.0 (1.0, 26.0)	4.0 (1.0, 13.0)
IQR	2.0	8.0	0	3.0	6.5	1.0	2.0	4.0	3.0	2.0	6.0	3.0
No admission to ICU/CICU	2,029	1,088	897	2,375	1,138	1,052	3,014	1,577	1,448	7,418	3,803	3,397
Missing	1	0	0	2	0	0	1	0	0	4	0	0

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Fibrinolytic therapy, No. (%)												
Given at this centre	1,131 (57.0)			1,109 (47.6)			1,477 (49.0)			3,717 (50.8)		
Given at another centre prior to transfer	446 (22.6)			577 (24.8)			747 (24.8)			1770 (24.2)		
Not given-proceeded directly to primary angioplasty	119 (6.0)			264 (11.3)			308 (10.2)			691 (9.4)		
Not given-Missed thrombolysis	216 (10.8)			279 (12.0)			332 (11.0)			827 (11.3)		
Not given-Patient refusal	7 (0.4)			8 (0.3)			19 (0.6)			34 (0.4)		
Not given-Contraindicated	63 (3.2)			92 (4.0)			130 (4.4)			285 (3.9)		
Not applicable	3			6			15			24		
Not available	11			11			26			48		
Missing	59			40			7			106		
Cardiac catheterisation, No. (%)												
Yes	452 (24.6)	302 (31.6)	110 (16.6)	862 (38.2)	305 (31.9)	168 (19.0)	1,336 (45.8)	603 (40.0)	313 (23.0)	2,650 (37.8)	1,210 (35.4)	591 (20.4)
No	1,325 (72.0)	621 (65.0)	511 (77.0)	1,289 (57.0)	609 (63.6)	691 (78.0)	1,545 (53.0)	896 (59.4)	1,030 (76.0)	4,159 (59.2)	2,126 (62.2)	2,232 (76.8)
Number transferred to another centre	64 (3.4)	32 (3.4)	43 (6.4)	107 (4.8)	43 (4.5)	26 (3.0)	35 (1.2)	8 (0.6)	13 (1.0)	206 (3.0)	83 (2.4)	82 (2.8)
Missing	214	139	234	128	189	172	145	95	108	487	423	514
Percutaneous Coronary Intervention, No. (%)												
Yes	401 (24.2)	191 (21.8)	65 (11.4)	747 (34.6)	218 (24.0)	93 (10.8)	1,070 (38.0)	276 (18.6)	138 (10.6)	2,218 (33.4)	685 (21.0)	296 (10.8)
No	1,253 (75.8)	688 (78.2)	504 (88.6)	1,409 (65.4)	688 (76.0)	766 (89.2)	1,729 (61.2)	1,201 (81.1)	1,162 (89.1)	4,391 (66.2)	2,577 (78.9)	2,432 (89.0)
Not Applicable							24 (0.8)	4 (0.3)	4 (0.3)	24 (0.4)	4 (0.1)	4 (0.2)
Missing	401	215	329	230	240	198	238	121	160	869	576	687

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	2,055	1,094	898	2,386	1,146	1,057	3,061	1,602	1,464	7,502	3,842	3,419
CABG, No. (%)												
Yes	14 (0.8)	29 (3.4)	13 (2.2)	16 (0.8)	17 (2.2)	11 (1.4)	36 (1.4)	37 (2.6)	25 (1.9)	66 (1.0)	83 (2.6)	49 (1.8)
No	1666 (99.2)	822 (96.6)	600 (97.8)	1953 (99.2)	788 (97.8)	784 (98.6)	2609 (97.1)	1405 (97.0)	1280 (97.3)	6228 (98.4)	3015 (97.2)	2664 (97.8)
Not Applicable							38 (1.5)	6 (0.4)	11 (0.8)	38 (0.6)	6 (0.2)	11 (0.4)
Missing	375	243	285	417	341	262	378	154	148	1170	738	695
Pre-admission aspirin use, No. (%)												
Yes	373 (19.0)	433 (43.0)	488 (58.6)	455 (20.0)	433 (40.6)	539 (54.4)	602 (20.6)	728 (48.6)	923 (65.6)	1,430 (20.0)	1,594 (44.6)	1,950 (60.4)
No	1,581 (81.0)	575 (57.0)	345 (41.4)	1,813 (80.0)	633 (59.4)	450 (45.6)	2,313 (79.4)	771 (51.4)	484 (34.4)	5,707 (80.0)	1,979 (55.4)	1,279 (39.6)
Missing	101	86	65	118	80	68	146	103	57	365	269	190
Pharmacological therapy given during admission, No. (%)												
Aspirin	1,964 (97.6)	1,021 (96.6)	819 (94.2)	2,241 (96.8)	1,084 (97.4)	951 (95.0)	2,843 (97.0)	1,479 (97.0)	1,349 (96.2)	7,048 (97.2)	3,584 (97.0)	3,119 (95.4)
*ADP antagonist	1,767 (89.8)	884 (86.6)	635 (74.4)	1,914 (86.6)	934 (87.0)	808 (82.2)	2,470 (96.0)	1,224 (93.8)	1,200 (92.8)	6,151 (91.2)	3,042 (89.4)	2,643 (84.4)
GP receptor inhibitor	74 (4.4)	32 (3.6)	23 (3.0)	90 (4.2)	26 (2.6)	20 (2.0)	71 (2.8)	4 (0.4)	7 (0.6)	235 (3.8)	62 (2.0)	50 (1.6)
Unfractionated heparin	187 (11.2)	92 (10.2)	82 (10.4)	316 (15.0)	121 (12.4)	74 (7.8)	436 (17.2)	125 (10.4)	86 (7.0)	939 (15.0)	338 (11.0)	242 (8.2)
LMWH	1,012 (57.2)	698 (72.2)	581 (71.2)	1139 (52.6)	755 (71.8)	652 (66.6)	644 (25.4)	397 (31.8)	254 (20.2)	2795 (43.2)	1,850 (56.6)	1,487 (48.6)
Fondaparinux							1,240 (54.0)	794 (67.8)	926 (74.4)	1240 (54.0)	794 (67.8)	926 (74.4)
Oral anticoagulant (eg. Warfarin)							27 (1.2)	23 (2.2)	36 (3.0)	27 (1.2)	23 (2.2)	36 (3.0)
Beta blocker	1,184 (65.0)	663 (66.8)	601 (71.2)	1,341 (61.4)	601 (57.6)	650 (66.2)	1,696 (64.2)	908 (69.4)	972 (72.2)	4,221 (63.4)	2,172 (65.0)	2,223 (70.0)
ACE inhibitor	1,057 (58.4)	579 (59.4)	515 (61.6)	1,126 (51.6)	622 (60.8)	573 (58.4)	1,373 (53.0)	693 (54.6)	796 (59.6)	3,556 (54.0)	1,894 (58.0)	1,884 (59.8)

Year	2011			2012			2013			2011-2013		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	**2,055**	**1,094**	**898**	**2,386**	**1,146**	**1,057**	**3,061**	**1,602**	**1,464**	**7,502**	**3,842**	**3,419**
Angiotensin II receptor blocker	78 (4.8)	106 (11.8)	98 (12.4)	93 (4.4)	86 (8.8)	119 (12.4)	57 (2.4)	89 (7.4)	136 (10.8)	228 (3.6)	281 (9.2)	353 (11.8)
Statin	1,852 (93.8)	966 (93.2)	781 (90.0)	2,105 (91.8)	1,001 (91.2)	900 (89.8)	2,660 (91.8)	1,296 (92.8)	1,278 (92.8)	6,617 (92.4)	3,263 (92.4)	2,959 (91.2)
Other lipid lowering agent	50 (3.0)	43 (4.8)	51 (6.4)	81 (3.8)	61 (6.2)	71 (7.4)	68 (2.8)	50 (4.2)	59 (4.8)	199 (3.2)	154 (5.0)	181 (6.0)
Diuretics	414 (24.0)	367 (39.4)	234 (28.6)	462 (21.4)	328 (32.4)	251 (25.8)	620 (24.4)	478 (38.0)	375 (29.4)	1,496 (23.2)	1,173 (36.6)	860 (28.0)
Calcium antagonist	109 (6.6)	183 (20.2)	214 (26.8)	131 (6.2)	173 (17.4)	188 (19.6)	143 (5.8)	244 (20.4)	318 (25.2)	383 (6.2)	600 (19.4)	720 (23.8)
Oral hypoglycaemic agent	365 (21.4)	314 (33.4)	302 (37.2)	394 (18.4)	250 (24.8)	307 (31.6)	489 (19.4)	373 (30.0)	419 (33.0)	1248 (19.6)	937 (29.4)	1,028 (33.6)
Insulin	426 (24.2)	238 (25.8)	171 (21.2)	493 (23.0)	247 (24.4)	160 (16.4)	658 (25.8)	352 (28.4)	286 (22.6)	1577 (24.4)	837 (26.4)	617 (20.2)
Anti-arrhythmic agent	187 (10.8)	82 (9.2)	36 (4.6)	157 (7.4)	78 (7.8)	50 (5.2)	174 (7.2)	64 (5.4)	68 (5.4)	518 (8.2)	224 (7.2)	154 (5.2)

Total admission days is derived as Outcome date-Admission date + 1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
* For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)

Table 4.2 Treatments for patients with STEMI by age group (years), NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**171**	**1,134**	**750**	**205**	**1,270**	**911**	**279**	**1,685**	**1,097**	**655**	**4,089**	**2,758**
#^Total admission days												
N	169	1,114	739	196	1,224	880	274	1,653	1,073	639	3,991	2,692
Mean (SD)	5.8 (4.2)	6.1 (5.3)	6.9 (7.0)	6.2 (5.9)	6.2 (6.8)	6.1 (5.5)	5.9 (6.2)	6.3 (6.7)	7.0 (7.6)	6.0 (5.7)	6.2 (6.4)	6.7 (6.9)
Median (min, max)	5.0 (1.0, 35.0)	5.0 (1.0, 94.0)	5.0 (1.0, 88.0)	5.0 (1.0, 66.0)	5.0 (1.0, 97.0)	5.0 (1.0, 75.0)	5.0 (1.0, 80.0)	5.0 (1.0, 95.0)	5.0 (1.0, 98.0)	5.0 (1.0, 80.0)	5.0 (1.0, 97.0)	5.0 (1.0, 98.0)
IQR	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	3.0
Missing	2	20	11	9	46	31	5	32	24	16	98	66
Number of days on CCU												
N	104	707	465	141	817	567	161	1,053	678	406	2,577	1,710
Mean (SD)	3.4 (2.1)	3.5 (3.0)	3.5 (2.8)	3.5 (2.7)	3.2 (2.4)	3.6 (3.5)	3.2 (2.6)	3.2 (2.6)	3.8 (3.7)	3.3 (2.5)	3.3 (2.6)	3.7 (3.4)
Median (min, max)	3.0 (1.0, 15.0)	3.0 (1.0, 30.0)	3.0 (1.0, 24.0)	3.0 (1.0, 20.0)	3.0 (1.0, 20.0)	3.0 (1.0, 27.0)	3.0 (1.0, 25.0)	3.0 (1.0, 21.0)	3.0 (1.0, 28.0)	3.0 (1.0, 25.0)	3.0 (1.0, 30.0)	3.0 (1.0, 28.0)
IQR	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
No admission to CCU	67	427	282	64	450	342	117	630	417	248	1,507	1,041
Missing	0	0	3	0	3	2	1	2	2	1	5	7
Number of days on ICU/CICU												
N	0	15	10	0	6	3	6	25	15	6	46	28
Mean (SD)		2.9 (1.8)	2.7 (1.6)		6.7 (8.2)	3.7 (1.5)	1.8 (0.8)	2.9 (1.6)	3.9 (3.7)	1.8 (0.8)	3.4 (3.4)	3.5 (2.9)
Median (min, max)		3.0 (1.0, 7.0)	2.0 (1.0, 6.0)		4.0 (1.0, 23.0)	4.0 (2.0, 5.0)	2.0 (1.0, 3.0)	3.0 (1.0, 8.0)	3.0 (1.0, 16.0)	2.0 (1.0, 3.0)	3.0 (1.0, 23.0)	2.5 (1.0, 16.0)
IQR		3.0	2.0		4.0	3.0	1.0	2.0	3.0	1.0	2.0	2.0
No admission to ICU/CICU	170	1,119	740	205	1,262	908	272	1,660	1,082	647	4,041	2,730
Missing	1	0	0	0	2	0	1	0	0	2	2	0

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**171**	**1,134**	**750**	**205**	**1,270**	**911**	**279**	**1,685**	**1,097**	**655**	**4,089**	**2,758**
Fibrinolytic therapy, No. (%)												
Given at this centre	89 (54.0)	658 (60.0)	384 (53.4)	94 (47.0)	596 (48.0)	419 (47.2)	146 (53.1)	817 (49.3)	514 (47.6)	329 (51.4)	2,071 (51.8)	1,317 (49.0)
Given at another centre prior to transfer	51 (31.0)	242 (22.0)	153 (21.2)	54 (27.0)	312 (25.1)	211 (23.8)	65 (23.6)	436 (26.3)	246 (22.8)	170 (26.6)	990 (24.8)	610 (22.7)
Not given-proceeded directly to primary angioplasty	6 (3.6)	69 (6.2)	44 (6.2)	29 (14.4)	140 (11.2)	95 (10.8)	25 (9.1)	174 (10.6)	109 (10.0)	60 (9.4)	383 (9.6)	248 (9.2)
Not given-Missed thrombolysis	15 (9.0)	105 (9.6)	96 (13.4)	18 (9.0)	148 (12.0)	113 (12.8)	28 (10.2)	165 (10.0)	139 (12.8)	61 (9.5)	418 (10.4)	348 (13.0)
Not given-Patient refusal	0 (0)	3 (0.2)	4 (0.6)	1 (0.6)	5 (0.4)	2 (0.2)	3 (1.0)	7 (0.4)	9 (0.8)	4 (0.6)	15 (0.4)	15 (0.6)
Not given-Contraindicated	4 (2.4)	21 (2.0)	38 (5.2)	4 (2.0)	42 (3.3)	46 (5.2)	8 (3.0)	57 (3.4)	65 (6.0)	16 (2.5)	120 (3.0)	149 (5.5)
Not applicable	0	1	2	1	5	0	1	7	7	2	13	9
Not available	2	5	4	1	3	7	2	18	6	5	26	17
Missing	4	30	25	3	19	18	1	4	2	8	53	45
Cardiac catheterisation, No. (%)												
Yes	44 (28.6)	261 (25.5)	147 (22.2)	97 (48.8)	479 (40.0)	286 (33.2)	131 (48.7)	766 (48.0)	439 (41.8)	272 (43.8)	1506 (39.4)	872 (33.8)
No	105 (68.2)	730 (71.4)	490 (73.8)	96 (48.2)	660 (55.2)	533 (61.8)	134 (49.8)	814 (50.9)	597 (57.0)	335 (53.8)	2204 (57.8)	1620 (63.0)
Number transferred to another centre	5 (3.2)	32 (3.1)	27 (4.0)	6 (3.0)	57 (4.8)	44 (5.0)	4 (1.5)	19 (1.1)	12 (1.2)	15 (2.4)	108 (2.8)	83 (3.2)
Missing	17	111	86	6	74	48	10	86	49	33	271	183
Percutaneous Coronary Intervention, No. (%)												
Yes	41 (28.2)	226 (24.6)	134 (22.6)	82 (43.0)	422 (36.6)	243 (29.8)	106 (40.3)	619 (40.0)	345 (34.0)	229 (38.2)	1267 (35.0)	722 (29.8)
No	104 (71.8)	691 (75.4)	458 (77.4)	109 (57.0)	730 (63.4)	570 (70.2)	152 (57.7)	917 (59.4)	660 (65.1)	365 (61.0)	2338 (64.7)	1688 (69.8)
Not Applicable							5 (2.0)	10 (0.6)	9 (0.9)	5 (0.8)	10 (0.3)	9 (0.4)
Missing	26	217	158	14	118	98	16	139	83	56	474	339

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**171**	**1,134**	**750**	**205**	**1,270**	**911**	**279**	**1,685**	**1,097**	**655**	**4,089**	**2,758**
CABG, No. (%)												
Yes	0 (0)	13 (1.4)	1 (0.2)	1 (0.6)	12 (1.2)	3 (0.4)	1 (0.4)	17 (1.2)	18 (1.8)	2 (0.3)	42 (1.2)	22 (1.0)
No	144 (100.0)	916 (98.6)	606 (99.8)	176 (99.4)	1041 (98.8)	736 (99.6)	242 (98.0)	1428 (97.5)	939 (96.6)	562 (99.0)	3,385 (98.2)	2,281 (98.4)
Not Applicable							4 (1.6)	19 (1.3)	15 (1.6)	4 (0.7)	19 (0.6)	15 (0.6)
Missing	27	205	143	28	217	172	32	221	125	87	643	440
Pre-admission aspirin use, No. (%)												
Yes	15 (9.2)	175 (16.2)	183 (25.8)	14 (7.4)	223 (18.4)	218 (25.2)	30 (11.0)	304 (19.0)	268 (25.6)	59 (9.4)	702 (18.0)	669 (25.4)
No	148 (90.8)	905 (83.8)	528 (74.2)	173 (92.6)	990 (81.6)	650 (74.8)	243 (89.0)	1292 (81.0)	778 (74.4)	564 (90.6)	3187 (82.0)	1956 (74.6)
Missing	8	54	39	18	57	43	6	89	51	32	200	133
Pharmacological therapy given during admission, No. (%)												
Aspirin	160 (96.4)	1,090 (98.2)	714 (97.0)	192 (95.0)	1,206 (97.8)	843 (95.8)	263 (98.2)	1,565 (97.4)	1,015 (96.2)	615 (96.6)	3,861 (97.6)	2,572 (96.4)
*ADP antagonist	145 (89.0)	996 (91.8)	626 (87.2)	160 (84.6)	1022 (87.0)	732 (86.4)	225 (96.6)	1335 (96.0)	910 (96.0)	530 (90.6)	3,353 (91.8)	2,268 (90.2)
GP receptor inhibitor	6 (4.2)	43 (4.8)	25 (4.2)	13 (7.4)	48 (4.2)	29 (3.6)	10 (4.4)	41 (3.0)	20 (2.2)	29 (5.4)	132 (4.0)	74 (3.2)
Unfractionated heparin	18 (12.8)	114 (12.4)	55 (9.2)	36 (20.2)	162 (14.4)	118 (14.6)	34 (14.8)	260 (18.8)	142 (15.6)	88 (16.0)	536 (15.6)	315 (13.6)
LMWH	92 (62.2)	566 (58.4)	354 (54.6)	89 (48.4)	627 (54.2)	423 (51.2)	55 (24.0)	357 (26.0)	232 (25.0)	236 (42.0)	1,550 (44.2)	1,009 (42.0)
Fondaparinux							132 (61.6)	687 (55.4)	421 (49.8)	132 (61.6)	687 (55.4)	421 (49.8)
Oral anticoagulant (eg. Warfarin)							4 (2.0)	8 (0.6)	15 (1.8)	4 (2.0)	8 (0.6)	15 (1.8)
Beta blocker	94 (61.4)	682 (67.8)	408 (61.6)	129 (67.6)	774 (66.4)	438 (53.0)	160 (66.4)	970 (66.4)	566 (60.0)	383 (65.4)	2426 (66.8)	1412 (58.0)
ACE inhibitor	82 (54.4)	577 (58.0)	398 (59.8)	99 (52.6)	641 (55.4)	386 (46.2)	117 (49.4)	813 (57.0)	443 (47.8)	298 (51.8)	2031 (56.8)	1227 (50.6)

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**171**	**1,134**	**750**	**205**	**1,270**	**911**	**279**	**1,685**	**1,097**	**655**	**4,089**	**2,758**
Angiotensin II receptor blocker	4 (2.8)	39 (4.2)	35 (5.8)	8 (4.6)	49 (4.4)	36 (4.4)	4 (1.8)	31 (2.4)	22 (2.4)	16 (3.0)	119 (3.6)	93 (4.0)
Statin	151 (92.0)	1032 (94.6)	669 (92.8)	179 (89.6)	1131 (93.0)	795 (90.6)	247 (91.8)	1472 (92.4)	941 (90.6)	577 (91.2)	3635 (93.2)	2405 (91.2)
Other lipid lowering agent	4 (2.8)	23 (2.6)	23 (3.8)	11 (6.0)	44 (3.8)	26 (3.2)	6 (2.6)	42 (3.2)	20 (2.2)	21 (3.8)	109 (3.2)	69 (3.0)
Diuretics	16 (11.0)	197 (20.8)	201 (31.4)	15 (8.2)	230 (20.2)	217 (26.4)	33 (14.4)	285 (20.6)	302 (32.6)	64 (11.4)	712 (20.6)	720 (30.2)
Calcium antagonist	6 (4.2)	41 (4.4)	62 (10.2)	5 (2.8)	55 (4.8)	71 (8.8)	9 (4.0)	62 (4.6)	72 (8.0)	20 (3.6)	158 (4.6)	205 (8.8)
Oral hypoglycaemic agent	17 (11.8)	227 (24.2)	121 (19.6)	22 (12.0)	233 (20.4)	139 (17.2)	35 (15.2)	289 (21.0)	165 (18.2)	74 (13.2)	749 (21.6)	425 (18.2)
Insulin	19 (12.8)	231 (23.8)	176 (27.4)	23 (12.4)	268 (23.6)	202 (24.6)	40 (17.2)	362 (26.0)	256 (27.8)	82 (14.4)	861 (24.6)	634 (26.6)
Anti-arrhythmic agent	10 (7.0)	98 (10.4)	79 (12.4)	14 (7.8)	74 (6.6)	69 (8.6)	10 (4.6)	74 (5.6)	90 (10.2)	34 (6.2)	246 (7.2)	238 (10.2)

Total admission days is derived as Outcome date-Admission date + 1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
* For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)
** Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

Table 4.3 Treatments for patients with STEMI by gender, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Total	1,738	317	2,048	338	2,611	450	6,397	1,105
#^Total admission days								
N	1,708	314	1,974	326	2,560	440	6,242	1,080
Mean (SD)	6.3 (5.7)	6.8 (7.0)	6.2 (6.5)	5.9 (4.5)	6.5 (7.0)	6.9 (6.7)	6.3 (6.5)	6.6 (6.3)
Median (min, max)	5.0 (1.0, 94.0)	5.0 (1.0, 74.0)	5.0 (1.0, 97.0)	5.0 (1.0, 43.0)	5.0 (1.0, 98.0)	5.0 (1.0, 62.0)	5.0 (1.0, 98.0)	5.0 (1.0, 74.0)
IQR	2.0	3.0	2.0	3.0	2.0	3.5	2.0	3.0
Missing	30	3	74	12	51	10	155	25
Number of days on CCU								
N	1,085	191	1,329	196	1,622	270	4,036	657
Mean (SD)	3.5 (2.9)	3.5 (2.6)	3.4 (2.9)	3.4 (3.1)	3.4 (3.0)	3.9 (3.5)	3.4 (2.9)	3.6 (3.1)
Median (min, max)	3.0 (1.0, 30.0)	3.0 (1.0, 20.0)	3.0 (1.0, 27.0)	3.0 (1.0, 24.0)	3.0 (1.0, 28.0)	3.0 (1.0, 26.0)	3.0 (1.0, 30.0)	3.0 (1.0, 26.0)
IQR	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0
No admission to CCU	650	126	715	141	986	178	2351	445
Missing	3	0	4	1	3	2	10	3
Number of days on ICU/CICU								
N	20	5	8	1	40	6	68	12
Mean (SD)	2.9 (1.8)	2.6 (0.9)	5.9 (7.1)	4.0 (.)	3.2 (2.6)	2.7 (1.9)	3.4 (3.3)	2.8 (1.4)
Median (min, max)	2.5 (1.0, 7.0)	2.0 (2.0, 4.0)	4.0 (1.0, 23.0)	4.0 (4.0, 4.0)	2.5 (1.0, 16.0)	2.5 (1.0, 6.0)	3.0 (1.0, 23.0)	2.5 (1.0, 6.0)
IQR	3.0	1.0	3.5	0	2.0	2.0	2.0	1.5
No admission to ICU/CICU	1717	312	2039	336	2570	444	6326	1092
Missing	1	0	1	1	1	0	3	1
Fibrinolytic therapy, No. (%)								
Given at this centre	966 (57.8)	165 (53.6)	954 (47.6)	155 (47.6)	1267 (49.2)	210 (47.3)	3,187 (51.0)	530 (49.2)
Given at another centre prior to transfer	376 (22.5)	70 (22.8)	505 (25.2)	72 (22.0)	652 (25.4)	95 (21.4)	1,533 (24.5)	237 (22.0)

Year	2011		2012		2013		2011-2013	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Total	1,738	317	2,048	338	2,611	450	6,397	1,105
Not given-proceeded directly to primary angioplasty	102 (6.1)	17 (5.5)	235 (11.8)	29 (8.8)	273 (10.6)	35 (8.0)	610 (9.8)	81 (7.6)
Not given-Missed thrombolysis	175 (10.4)	41 (13.3)	231 (11.6)	48 (14.8)	265 (10.4)	67 (15.1)	671 (10.8)	156 (14.4)
Not given-Patient refusal	7 (0.4)	0 (0)	5 (0.2)	3 (1.0)	15 (0.6)	4 (1.0)	27 (0.4)	7 (0.6)
Not given-Contraindicated	48 (2.8)	15 (4.8)	73 (3.6)	19 (5.8)	98 (3.8)	32 (7.2)	219 (3.5)	66 (6.2)
Not applicable	3	0	6	0	12	3	21	3
Not available	10	1	8	3	23	3	41	7
Missing	51	8	31	9	6	1	88	18
Cardiac catheterisation, No. (%)								
Yes	395 (25.4)	57 (19.6)	763 (39.5)	99 (30.4)	1,162 (46.7)	174 (40.4)	2,320 (38.8)	330 (31.5)
No	1,099 (71.0)	226 (77.6)	1,080 (55.9)	209 (64.4)	1,290 (52.0)	255 (59.2)	3,469 (58.2)	690 (66.0)
Number transferred to another centre	56 (3.6)	8 (2.8)	90 (4.6)	17 (5.2)	33 (1.3)	2 (0.4)	179 (3.0)	27 (2.5)
Missing	188	26	115	13	126	19	429	58
Percutaneous Coronary Intervention, No. (%)								
Yes	354 (25.2)	47 (18.6)	668 (36.2)	79 (25.8)	927 (38.6)	143 (33.8)	1,949 (34.4)	269 (27.4)
No	1,048 (74.8)	205 (81.4)	1,181 (63.8)	228 (74.2)	1,453 (60.6)	276 (65.2)	3,682 (65.2)	709 (72.2)
Not Applicable					20 (0.8)	4 (1.0)	20 (0.4)	4 (0.4)
Missing	336	65	199	31	211	27	746	123
CABG, No. (%)								
Yes	12 (0.8)	2 (0.8)	16 (1.0)	0 (0)	35 (1.5)	1 (0.2)	63 (1.2)	3 (0.3)
No	1,412 (99.2)	254 (99.2)	1,679 (99.0)	274 (100.0)	2,210 (97.0)	399 (99.0)	5,301 (98.2)	927 (99.4)
Not Applicable					35 (1.5)	3 (0.8)	35 (0.6)	3 (0.3)
Missing	314	61	353	64	331	47	998	172

Year	2011		2012		2013		2011-2013	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Total	1738	317	2048	338	2611	450	6397	1105
Pre-admission aspirin use, No. (%)								
Yes	315 (19.0)	58 (19.0)	389 (20.0)	66 (20.4)	489 (19.8)	113 (26.0)	1,193 (19.6)	237 (22.4)
No	1,335 (81.0)	246 (81.0)	1,554 (80.0)	259 (79.6)	1,993 (80.2)	320 (74.0)	4,882 (80.4)	825 (77.6)
Missing	88	13	105	13	129	17	322	43
Pharmacological therapy given during admission, No. (%)								
Aspirin	1,666 (97.8)	298 (96.2)	1,928 (96.8)	313 (96.0)	2,430 (97.2)	413 (96.2)	6,024 (97.2)	1,024 (96.2)
*ADP antagonist	1,503 (90.4)	264 (87.4)	1,636 (86.2)	278 (88.2)	2,102 (96.2)	368 (95.6)	5,241 (91.2)	910 (90.8)
GP receptor inhibitor	63 (4.4)	11 (4.2)	77 (4.2)	13 (4.4)	65 (3.0)	6 (1.6)	205 (3.8)	30 (3.2)
Unfractionated heparin	160 (11.4)	27 (10.6)	287 (15.8)	29 (9.6)	369 (17.2)	67 (18.0)	816 (15.2)	123 (13.2)
LMWH	858 (57.4)	154 (56.6)	986 (53.0)	153 (50.0)	549 (25.4)	95 (25.4)	2,393 (43.4)	402 (42.2)
Fondaparinux					1,060 (54.2)	180 (53.0)	1,060 (54.2)	180 (53.0)
Oral anticoagulant (eg. Warfarin)					20 (1.0)	7 (2.2)	20 (1.0)	7 (2.2)
Beta blocker	1,006 (65.4)	178 (62.8)	1,159 (61.8)	182 (59.0)	1,457 (64.6)	239 (61.2)	3,622 (64.0)	599 (61.0)
ACE inhibitor	901 (58.8)	156 (56.0)	987 (52.6)	139 (45.2)	1179 (53.4)	194 (50.2)	3,067 (54.6)	489 (50.4)
Angiotensin II receptor blocker	59 (4.2)	19 (7.4)	74 (4.2)	19 (6.4)	50 (2.4)	7 (2.0)	183 (3.4)	45 (4.8)
Statin	1,581 (94.2)	271 (91.6)	1,818 (92.2)	287 (88.8)	2,276 (91.8)	384 (90.8)	5,675 (92.6)	942 (90.4)
Other lipid lowering agent	35 (2.4)	15 (5.8)	75 (4.2)	6 (2.0)	59 (2.8)	9 (2.4)	169 (3.2)	30 (3.2)
Diuretics	336 (23.0)	78 (29.4)	389 (21.2)	73 (23.8)	500 (23.0)	120 (32.0)	1,225 (22.4)	271 (28.6)
Calcium antagonist	85 (6.0)	24 (9.2)	100 (5.6)	31 (10.2)	116 (5.6)	27 (7.6)	301 (5.6)	82 (9.0)
Oral hypoglycaemic agent	288 (20.2)	77 (28.6)	314 (17.2)	80 (26.4)	393 (18.2)	96 (26.0)	995 (18.4)	253 (27.0)
Insulin	315 (21.2)	111 (40.0)	381 (20.8)	112 (36.4)	492 (22.8)	166 (44.0)	1,188 (21.6)	389 (40.4)
Anti-arrhythmic agent	158 (10.8)	29 (10.8)	136 (7.6)	21 (7.0)	154 (7.4)	20 (5.6)	448 (8.4)	70 (7.6)

Total admission days is derived as Outcome date-Admission date +1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
*For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)

Table 4.4 Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2011-2013

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	#Others##	Malay	Chinese	Indian	#Others##	Malay	Chinese	Indian	#Others##	Malay	Chinese	Indian	#Others##
Total	**1,140**	**389**	**336**	**190**	**1,387**	**386**	**345**	**268**	**1,791**	**487**	**464**	**319**	**4,318**	**1,262**	**1,145**	**777**
#^Total admission days																
N	1,124	384	330	184	1,335	371	334	260	1,751	478	458	313	4,210	1,233	1,122	757
Mean (SD)	6.3 (5.4)	6.4 (5.6)	6.9 (8.2)	6.1 (4.4)	6.3 (6.5)	5.7 (4.4)	6.2 (6.6)	6.0 (6.7)	6.7 (7.4)	6.2 (6.4)	6.8 (6.6)	5.9 (5.9)	6.4 (6.7)	6.1 (5.6)	6.7 (7.1)	6.0 (5.9)
Median (min, max)	5.0 (1.0, 74.0)	5.0 (1.0, 66.0)	5.0 (1.0, 94.0)	5.0 (1.0, 35.0)	5.0 (1.0, 97.0)	5.0 (1.0, 41.0)	5.0 (1.0, 95.0)	5.0 (1.0, 67.0)	5.0 (1.0, 98.0)	5.0 (1.0, 63.0)	5.0 (1.0, 80.0)	5.0 (1.0, 65.0)	5.0 (1.0, 98.0)	5.0 (1.0, 66.0)	5.0 (1.0, 95.0)	5.0 (1.0, 67.0)
IQR	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	3.0	2.0
Missing	16	5	6	6	52	15	11	8	40	9	6	6	108	29	23	20
Number of days on CCU																
N	726	224	191	135	917	239	183	186	1,168	289	231	204	2,811	752	605	525
Mean (SD)	3.3 (2.4)	3.7 (3.5)	3.8 (3.2)	3.7 (3.2)	3.3 (2.7)	3.5 (3.6)	3.7 (3.0)	3.4 (2.4)	3.5 (3.2)	3.2 (2.6)	3.4 (2.9)	3.5 (2.6)	3.4 (2.9)	3.4 (3.2)	3.6 (3.0)	3.5 (2.7)
Median (min, max)	3.0 (1.0, 24.0)	3.0 (1.0, 30.0)	3.0 (1.0, 24.0)	3.0 (1.0, 24.0)	3.0 (1.0, 25.0)	3.0 (1.0, 27.0)	3.0 (1.0, 24.0)	3.0 (1.0, 20.0)	3.0 (1.0, 28.0)	3.0 (1.0, 25.0)	3.0 (1.0, 26.0)	3.0 (1.0, 22.0)	3.0 (1.0, 28.0)	3.0 (1.0, 30.0)	3.0 (1.0, 26.0)	3.0 (1.0, 24.0)
IQR	2.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
No admission to CCU	412	165	145	54	467	146	161	82	620	198	231	115	1,499	509	537	251
Missing	2	0	0	1	3	1	1	0	3	0	2	0	8	1	3	1
Number of days on ICU/CICU																
N	16	3	4	2	7	1	0	1	25	5	9	7	48	9	13	10
Mean (SD)	3.2 (1.6)	1.3 (0.6)	2.0 (0.8)	3.5 (3.5)	6.6 (7.5)	3.0 (.)		2.0 (.)	3.5 (3.0)	1.8 (1.3)	3.2 (1.6)	2.6 (1.5)	3.8 (3.7)	1.8 (1.1)	2.8 (1.5)	2.7 (1.8)
Median (min, max)	3.0 (1.0, 7.0)	1.0 (1.0, 2.0)	2.0 (1.0, 3.0)	3.5 (1.0, 6.0)	5.0 (1.0, 23.0)	3.0 (3.0, 3.0)		2.0 (2.0, 2.0)	3.0 (1.0, 16.0)	1.0 (1.0, 4.0)	3.0 (1.0, 6.0)	2.0 (1.0, 5.0)	3.0 (1.0, 23.0)	1.0 (1.0, 4.0)	3.0 (1.0, 6.0)	2.0 (1.0, 6.0)

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others
Total	1,140	389	336	190	1,387	386	345	268	1,791	487	464	319	4,318	1,262	1,145	777
IQR	2.0	1.0	1.0	5.0	4.0	0		0	2.0	1.0	2.0	3.0	2.0	1.0	1.0	3.0
No admission to ICU/CICU	1,123	386	332	188	1,380	384	344	267	1,765	482	455	312	4,268	1,252	1,131	767
Missing	1	0	0	0	0	1	1	0	1	0	0	0	2	1	1	0
Fibrinolytic therapy, No. (%)																
Given at this centre	648 (58.8)	225 (60.2)	182 (56.6)	76 (41.0)	658 (48.4)	167 (44.6)	188 (56.6)	96 (36.6)	878 (49.9)	233 (48.6)	233 (51.2)	133 (42.0)	2,184 (51.7)	625 (50.9)	603 (54.4)	305 (40.0)
Given at another centre prior to transfer	246 (22.4)	67 (18.0)	62 (19.2)	71 (38.4)	344 (25.2)	80 (21.4)	47 (14.2)	106 (40.4)	431 (24.5)	100 (20.8)	92 (20.2)	124 (39.1)	1,021 (24.2)	247 (20.1)	201 (18.1)	301 (39.4)
Not given-proceeded directly to primary angioplasty	64 (5.8)	16 (4.2)	32 (10.0)	7 (3.8)	150 (11.0)	54 (14.4)	42 (12.6)	18 (6.8)	182 (10.4)	54 (11.2)	58 (12.8)	14 (4.4)	396 (9.4)	124 (10.1)	132 (12.0)	39 (5.1)
Not given-Missed thrombolysis	108 (9.8)	51 (13.6)	35 (10.8)	22 (11.8)	155 (11.4)	52 (13.8)	47 (14.2)	25 (9.6)	181 (10.2)	62 (13.0)	57 (12.6)	32 (10.0)	444 (10.5)	165 (13.4)	139 (12.5)	79 (10.3)
Not given-Patient refusal	2 (0.2)	4 (1.0)	0 (0)	1 (0.6)	5 (0.4)	1 (0.2)	0 (0)	2 (0.8)	11 (0.6)	6 (1.2)	1 (0.2)	1 (0.4)	18 (0.4)	11 (0.9)	1 (0.0)	4 (0.5)
Not given-Contraindicated	33 (3.0)	11 (3.0)	11 (3.4)	8 (4.4)	48 (3.6)	21 (5.6)	8 (2.4)	15 (5.8)	78 (4.4)	25 (5.2)	14 (3.0)	13 (4.1)	159 (3.8)	57 (4.6)	33 (3.0)	36 (4.7)
Not applicable	1	0	2	0	2	1	2	1	7	2	6	0	10	3	10	1
Not available	5	3	3	0	5	3	3	0	17	4	3	2	27	10	9	2
Missing	33	12	9	5	20	7	8	5	6	1	0	0	59	20	17	10

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##
Total	**1,140**	**389**	**336**	**190**	**1,387**	**386**	**345**	**268**	**1,791**	**487**	**464**	**319**	**4,318**	**1,262**	**1,145**	**777**
Cardiac catheterisation, No. (%)																
Yes	214 (21.4)	99 (27.8)	88 (29.1)	51 (28.3)	497 (37.6)	163 (44.8)	109 (33.2)	93 (37.8)	755 (44.4)	240 (50.8)	203 (46.0)	138 (45.6)	1,466 (36.4)	502 (42.1)	400 (37.3)	282 (38.7)
No	752 (75.0)	247 (69.2)	207 (68.6)	119 (66.1)	760 (57.6)	189 (52.0)	197 (59.8)	143 (58.2)	929 (54.7)	226 (47.9)	230 (52.0)	160 (52.8)	2,441 (60.8)	662 (55.5)	634 (59.1)	422 (57.9)
Number transferred to another centre	36 (3.6)	11 (3.0)	7 (2.3)	10 (5.6)	62 (4.8)	12 (3.2)	23 (7.0)	10 (4.0)	15 (0.9)	6 (1.3)	9 (2.0)	5 (1.6)	113 (2.8)	29 (2.4)	39 (3.6)	25 (3.4)
Missing	138	32	34	10	68	22	16	22	92	15	22	16	298	69	72	48
Percutaneous Coronary Intervention, No. (%)																
Yes	198 (22.4)	85 (25.8)	76 (28.4)	42 (24.4)	430 (34.2)	141 (39.8)	101 (33.4)	75 (31.0)	601 (36.6)	187 (40.4)	164 (38.6)	118 (40.7)	1,229 (32.4)	413 (36.0)	341 (34.3)	235 (33.4)
No	686 (77.6)	245 (74.2)	192 (71.6)	130 (75.6)	828 (65.8)	213 (60.2)	201 (66.6)	167 (69.0)	1030 (62.6)	275 (59.2)	255 (60.2)	169 (58.3)	2,544 (67.2)	733 (63.8)	648 (65.2)	466 (66.2)
Not Applicable									14 (0.8)	2 (0.4)	5 (1.2)	3 (1.0)	14 (0.4)	2 (0.2)	5 (0.5)	3 (0.4)
Missing	256	59	68	18	129	32	43	26	146	23	40	29	531	114	151	73
CABG, No. (%)																
Yes	9 (1.0)	1 (0.4)	4 (1.6)	0 (0)	8 (0.6)	5 (1.6)	1 (0.4)	2 (1.0)	26 (1.6)	4 (1.0)	3 (0.8)	3 (1.2)	43 (1.2)	10 (0.9)	8 (0.8)	5 (0.8)
No	912 (99.0)	326 (99.6)	259 (98.4)	169 (100.0)	1162 (99.4)	306 (98.4)	270 (99.6)	215 (99.0)	1541 (97.2)	424 (96.8)	404 (97.8)	240 (97.6)	3615 (98.3)	1,056 (98.2)	933 (98.6)	624 (98.8)
Not Applicable									19 (1.2)	10 (2.2)	6 (1.4)	3 (1.2)	19 (0.5)	10 (0.9)	6 (0.6)	3 (0.4)
Missing	219	62	73	21	217	75	74	51	205	49	51	73	641	186	198	145

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others
Total	**1,140**	**389**	**336**	**190**	**1,387**	**386**	**345**	**268**	**1,791**	**487**	**464**	**319**	**4,318**	**1,262**	**1,145**	**777**
Pre-admission aspirin use, No. (%)																
Yes	217 (20.0)	71 (19.2)	66 (20.8)	19 (10.4)	285 (21.6)	65 (17.8)	76 (23.2)	29 (11.4)	346 (20.4)	93 (19.8)	124 (27.8)	39 (12.8)	848 (20.6)	229 (19.0)	266 (24.4)	87 (11.8)
No	869 (80.0)	297 (80.8)	250 (79.2)	165 (89.6)	1038 (78.4)	299 (82.2)	252 (76.8)	224 (88.6)	1,350 (79.6)	375 (80.2)	322 (72.2)	266 (87.2)	3257 (79.4)	971 (81.0)	824 (75.6)	655 (88.2)
Missing	54	21	20	6	64	22	17	15	95	19	18	14	213	62	55	35
Pharmacological therapy given during admission, No. (%)																
Aspirin	1,095 (97.6)	368 (97.6)	315 (97.0)	186 (99.4)	1,298 (96.8)	368 (97.6)	328 (96.8)	247 (95.0)	1,655 (96.8)	455 (96.4)	428 (97.8)	305 (98.0)	4,048 (97.0)	1,191 (97.2)	1,071 (97.2)	738 (97.4)
*ADP antagonist	971 (88.6)	343 (92.0)	287 (90.6)	166 (92.8)	1,098 (86.6)	323 (88.4)	288 (87.6)	205 (82.0)	1,440 (96.4)	414 (95.6)	374 (96.4)	242 (94.6)	3,509 (91.0)	1,080 (92.2)	949 (91.8)	613 (89.4)
GP receptor inhibitor	39 (4.4)	14 (4.4)	15 (5.6)	6 (3.6)	47 (4.0)	17 (4.8)	12 (3.8)	14 (6.0)	41 (3.0)	14 (3.4)	11 (3.0)	5 (1.8)	127 (3.6)	45 (4.2)	38 (4.0)	25 (3.6)
Unfractionated heparin	99 (11.0)	33 (10.4)	31 (11.6)	24 (14.2)	209 (17.2)	39 (11.2)	55 (17.4)	13 (5.6)	268 (18.6)	68 (16.6)	78 (20.2)	22 (7.8)	576 (16.2)	140 (13.0)	164 (17.0)	59 (8.6)
LMWH	505 (52.4)	201 (60.2)	165 (57.2)	141 (78.4)	573 (46.0)	214 (60.8)	171 (53.2)	181 (72.4)	257 (17.8)	127 (30.6)	107 (27.2)	153 (52.8)	1,335 (36.6)	542 (49.2)	443 (44.2)	475 (66.0)
Fondaparinux									752 (56.2)	208 (53.8)	192 (55.4)	88 (38.4)	752 (56.2)	208 (53.8)	192 (55.4)	88 (38.4)
Oral anticoagulant (eg. Warfarin)									16 (1.4)	3 (0.8)	5 (1.6)	3 (1.2)	16 (1.4)	3 (0.8)	5 (1.6)	3 (1.2)
Beta blocker	657 (65.6)	228 (65.2)	185 (63.2)	114 (64.0)	766 (61.2)	230 (63.8)	194 (60.0)	151 (61.2)	961 (63.4)	272 (62.6)	270 (66.8)	193 (66.4)	2,384 (63.2)	730 (63.6)	649 (63.6)	458 (64.0)

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##
Total	**1,140**	**389**	**336**	**190**	**1,387**	**386**	**345**	**268**	**1,791**	**487**	**464**	**319**	**4,318**	**1,262**	**1,145**	**777**
ACE inhibitor	602 (60.4)	200 (57.4)	163 (55.6)	92 (52.8)	661 (52.8)	175 (48.4)	169 (52.8)	121 (49.4)	787 (52.8)	230 (54.8)	221 (55.8)	135 (47.2)	2,050 (54.8)	605 (53.6)	553 (54.8)	348 (49.4)
Angiotensin II receptor blocker	45 (5.0)	7 (2.2)	18 (6.6)	8 (4.8)	51 (4.2)	13 (3.8)	16 (5.0)	13 (5.6)	28 (2.0)	12 (3.0)	9 (2.4)	8 (2.8)	124 (3.6)	32 (3.0)	43 (4.4)	29 (4.2)
Statin	1,023 (93.6)	344 (92.2)	304 (94.8)	181 (96.2)	1223 (92.0)	342 (92.4)	302 (89.8)	238 (91.8)	1,561 (92.0)	426 (92.2)	403 (92.6)	270 (88.6)	3,807 (92.4)	1,112 (92.2)	1,009 (92.4)	689 (91.6)
Other lipid lowering agent	28 (3.0)	11 (3.4)	8 (3.0)	3 (1.8)	45 (3.8)	8 (2.2)	20 (6.4)	8 (3.4)	34 (2.4)	14 (3.4)	15 (4.0)	5 (1.8)	107 (3.0)	33 (3.0)	43 (4.4)	16 (2.4)
Diuretics	216 (23.0)	76 (22.8)	68 (24.0)	54 (31.2)	267 (21.6)	78 (22.0)	65 (20.4)	52 (21.4)	382 (26.2)	87 (20.8)	91 (23.6)	60 (21.0)	865 (23.8)	241 (21.8)	224 (22.8)	166 (23.8)
Calcium antagonist	61 (6.8)	22 (6.8)	16 (6.0)	10 (6.0)	75 (6.2)	24 (6.8)	20 (6.4)	12 (5.2)	88 (6.2)	30 (7.4)	13 (3.4)	12 (4.2)	224 (6.4)	76 (7.0)	49 (5.0)	34 (5.0)
Oral hypoglycaemic agent	201 (21.6)	58 (17.4)	83 (30.0)	23 (13.8)	230 (18.8)	52 (14.8)	85 (26.8)	27 (11.2)	278 (19.4)	74 (17.8)	111 (28.6)	26 (9.2)	709 (19.8)	184 (16.8)	279 (28.4)	76 (11.0)
Insulin	266 (27.4)	51 (15.2)	91 (31.8)	18 (10.6)	299 (24.4)	61 (17.4)	107 (33.2)	26 (10.8)	385 (26.4)	81 (19.6)	148 (37.6)	44 (15.4)	950 (26.0)	193 (17.6)	346 (34.6)	88 (12.6)
Anti-arrhythmic agent	103 (11.0)	37 (11.2)	36 (12.8)	11 (6.6)	83 (7.0)	28 (8.0)	22 (7.0)	24 (10.0)	107 (7.6)	25 (6.2)	27 (7.2)	15 (5.4)	293 (8.2)	90 (8.4)	85 (8.8)	50 (7.4)

Total admission days is derived as Outcome date-Admission date + 1
^ *Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)*
* *For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)*
"Others" includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

Table 4.5 Door to needle and balloon time distribution for patients with STEMI by year, NCVD-ACS Registry, 2011-2013

ACS stratum	STEMI only			
Year	**2011**	**2012**	**2013**	**2011-2013**
*Door-to-needle time, min	1577	1686	2224	5487
N	1,009	960	1,387	3,356
Mean (SD)	105.7 (201.8)	134.6 (240.1)	132.9 (226.9)	125.2 (223.9)
Median (min, max)	40.0 (2.0, 1,390.0)	45.0 (1.0, 1,380.0)	49.0 (1.0, 1,440.0)	45.0 (1.0, 1,440.0)
IQR	55.0	78.5	85.0	75.0
Not available	568	726	837	2131
**Door-to-balloon time, min	254	523	731	1508
N	113	256	203	572
Mean (SD)	216.5 (252.0)	246.4 (321.1)	214.9 (301.0)	229.3 (301.3)
Median (min, max)	120.0 (5.0, 1,305.0)	113.5 (15.0, 1,440.0)	104.0 (5.0, 1,440.0)	111.0 (5.0, 1,440.0)
IQR	133.0	164.0	119.0	139.0
Not available	141	267	528	936

* Door-to-needle time only available for STEMI patients who were given fibrinolytic therapy
** Door-to-balloon time only available for STEMI patients who had urgent PCI procedure

Table 4.6 Treatments for patients with NSTEMI/UA by age group (years), NCVD-ACS Registry, 2011-2013

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**73**	**865**	**1,054**	**102**	**941**	**1,160**	**128**	**1,359**	**1,579**	**303**	**3,165**	**3,793**
#"Total admission days												
N	72	852	1,041	100	921	1,140	128	1,346	1,559	300	3,119	3,740
Mean (SD)	4.5 (2.9)	5.8 (7.3)	6.4 (7.6)	5.8 (7.3)	5.4 (5.1)	6.8 (8.0)	5.2 (6.0)	6.0 (7.2)	6.6 (7.5)	5.2 (5.9)	5.8 (6.7)	6.6 (7.7)
Median (min, max)	4.0 (1.0, 19.0)	4.0 (1.0, 95.0)	4.0 (1.0, 96.0)	4.0 (1.0, 64.0)	4.0 (1.0, 65.0)	5.0 (1.0, 100.0)	4.0 (1.0, 51.0)	4.0 (1.0, 95.0)	4.0 (1.0, 100.0)	4.0 (1.0, 64.0)	4.0 (1.0, 95.0)	4.0 (1.0, 100.0)
IQR	2.0	2.0	4.0	3.0	3.0	4.0	2.0	3.0	4.0	2.0	3.0	4.0
Missing	1	13	13	2	20	20	0	13	20	3	46	53
Number of days on CCU												
N	14	152	209	23	191	256	22	197	245	59	540	710
Mean (SD)	3.4 (1.2)	3.6 (2.7)	3.8 (3.6)	2.4 (1.4)	3.2 (2.7)	3.9 (4.0)	3.0 (2.6)	3.8 (3.9)	3.6 (3.3)	2.8 (1.9)	3.5 (3.2)	3.8 (3.6)
Median (min, max)	3.0 (2.0, 6.0)	3.0 (1.0, 23.0)	3.0 (1.0, 20.0)	2.0 (1.0, 5.0)	3.0 (1.0, 20.0)	2.0 (1.0, 24.0)	2.0 (1.0, 11.0)	3.0 (1.0, 30.0)	3.0 (1.0, 21.0)	2.0 (1.0, 11.0)	3.0 (1.0, 30.0)	3.0 (1.0, 24.0)
IQR	1.0	3.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
No admission to CCU	59	713	844	79	750	901	106	1,162	1,332	244	2,625	3,077
Missing	0	0	1	0	0	3	0	0	2	0	0	6
Number of days on ICU/CICU												
N	0	2	5	1	5	7	0	21	20	1	28	32
Mean (SD)		10.0 (4.2)	5.0 (5.1)	7.0 (.)	4.6 (4.4)	5.7 (6.8)		4.2 (2.8)	6.7 (6.4)	7.0 (.)	4.7 (3.4)	6.2 (6.1)
Median (min, max)		10.0 (7.0, 13.0)	2.0 (1.0, 12.0)	7.0 (7.0, 7.0)	3.0 (1.0, 12.0)	4.0 (2.0, 21.0)		3.0 (1.0, 11.0)	4.5 (1.0, 26.0)	7.0 (7.0, 7.0)	3.5 (1.0, 13.0)	4.0 (1.0, 26.0)
IQR		6.0	8.0	0	3.0	2.0		2.0	4.0	0	3.5	4.0
No admission to ICU/CICU	73	863	1,049	101	936	1,153	128	1,338	1,559	302	3,137	3,761
Missing	0	0	0	0	0	0	0	0	0	0	0	0

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	73	865	1,054	102	941	1,160	128	1,359	1,579	303	3,165	3,793
Cardiac catheterisation, No. (%)												
Yes	14 (26.4)	207 (30.0)	191 (21.8)	22 (25.9)	222 (28.2)	229 (23.6)	35 (30.0)	448 (35.6)	433 (29.1)	71 (27.8)	877 (32.0)	853 (25.6)
No	35 (66.0)	451 (65.1)	646 (74.0)	57 (67.0)	530 (67.4)	713 (73.6)	81 (69.2)	802 (63.7)	1,043 (70.1)	173 (67.8)	1,783 (65.2)	2,402 (72.2)
Number transferred to another centre	4 (7.6)	34 (4.9)	37 (4.2)	6 (7.1)	35 (4.4)	28 (2.8)	1 (0.8)	9 (0.7)	11 (0.8)	11 (4.4)	78 (2.8)	76 (2.2)
Missing	20	173	180	17	154	190	11	100	92	48	427	462
Percutaneous Coronary Intervention, No. (%)												
Yes	10 (20.4)	132 (21.2)	114 (14.6)	20 (26.0)	153 (20.0)	138 (15.0)	22 (19.5)	192 (15.7)	200 (13.8)	52 (21.8)	477 (18.3)	452 (14.4)
No	39 (79.6)	489 (78.8)	664 (85.4)	57 (74.0)	610 (80.0)	787 (85.0)	90 (79.6)	1,025 (84.0)	1,248 (86.0)	186 (77.8)	2,124 (81.5)	2,699 (85.6)
Not Applicable							1 (0.9)	4 (0.3)	3 (0.2)	1 (0.4)	4 (0.2)	3 (0.0)
Missing	24	244	276	25	178	235	15	138	128	64	560	639
CABG, No. (%)												
Yes	1 (2.0)	20 (3.2)	21 (2.6)	0 (0)	15 (2.2)	13 (1.6)	0 (0)	36 (3.0)	26 (1.8)	1 (0.4)	71 (2.8)	60 (2.0)
No	47 (98.0)	600 (96.8)	775 (97.4)	71 (100.0)	662 (97.8)	839 (98.4)	111 (97.4)	1,161 (96.2)	1,413 (97.8)	229 (98.3)	2,423 (96.8)	3,027 (97.8)
Not Applicable							3 (2.6)	9 (0.8)	5 (0.4)	3 (1.3)	9 (0.4)	5 (0.2)
Missing	25	245	258	31	264	308	14	153	135	70	662	701
Pre-admission aspirin use, No. (%)												
Yes	21 (32.4)	383 (48.0)	517 (53.0)	37 (39.4)	413 (47.2)	522 (48.0)	42 (33.8)	689 (54.0)	920 (61.2)	100 (35.4)	1,485 (50.4)	1,959 (55.0)
No	44 (67.6)	416 (52.0)	460 (47.0)	57 (60.6)	462 (52.8)	564 (52.0)	82 (66.2)	589 (46.0)	584 (38.8)	183 (64.6)	1,467 (49.6)	1,608 (45.0)
Missing	8	66	77	8	66	74	4	81	75	20	213	226

Year	2011			2012			2013			2011-2013		
Age group	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly	Young	Middle-Age	Elderly
Total	**73**	**865**	**1,054**	**102**	**941**	**1,160**	**128**	**1,359**	**1,579**	**303**	**3,165**	**3,793**
Pharmacological therapy given during admission, No. (%)												
Aspirin	67 (91.8)	812 (97.0)	961 (94.4)	91 (94.8)	881 (97.6)	1,063 (95.2)	119 (97.6)	1,254 (97.4)	1,455 (96.0)	277 (95.2)	2,947 (97.4)	3,479 (95.4)
*ADP antagonist	56 (80.0)	657 (81.2)	806 (81.0)	74 (79.6)	742 (85.6)	926 (84.6)	93 (94.0)	1,053 (92.8)	1,278 (93.4)	223 (85.2)	2,452 (87.2)	3,010 (87.0)
GP receptor inhibitor	2 (3.4)	26 (3.6)	27 (3.0)	4 (4.6)	18 (2.2)	24 (2.4)	0 (0)	7 (0.6)	4 (0.4)	6 (2.4)	51 (2.0)	55 (1.6)
Unfractionated heparin	3 (5.4)	82 (11.6)	89 (9.6)	11 (12.6)	75 (9.2)	109 (10.6)	8 (8.0)	79 (7.6)	124 (9.6)	22 (9.0)	236 (9.2)	322 (9.8)
LMWH	39 (63.0)	557 (72.4)	683 (71.8)	65 (69.2)	596 (69.0)	746 (69.6)	27 (25.8)	257 (24.0)	367 (27.4)	131 (50.2)	1410 (52.2)	1796 (53.4)
Fondaparinux							63 (69.2)	788 (75.4)	869 (67.8)	63 (69.2)	788 (75.4)	869 (67.8)
Oral anticoagulant (eg. Warfarin)							1 (1.2)	25 (2.6)	33 (2.8)	1 (1.2)	25 (2.6)	33 (2.8)
Beta blocker	49 (74.2)	544 (69.8)	671 (67.6)	49 (53.8)	550 (64.0)	652 (60.6)	62 (60.2)	850 (73.0)	968 (69.6)	160 (61.6)	1944 (69.4)	2291 (66.2)
ACE inhibitor	30 (48.4)	505 (65.4)	559 (57.2)	49 (53.8)	511 (60.4)	635 (59.6)	61 (58.6)	682 (60.2)	746 (54.6)	140 (54.2)	1698 (61.8)	1940 (57.0)
Angiotensin II receptor blocker	4 (6.8)	75 (10.6)	125 (13.4)	4 (4.4)	87 (10.6)	114 (11.0)	5 (5.0)	85 (8.2)	135 (10.4)	13 (5.2)	247 (9.6)	374 (11.4)
Statin	60 (85.8)	755 (92.6)	932 (91.6)	88 (90.8)	810 (90.6)	1003 (90.4)	100 (91.0)	1135 (93.4)	1339 (92.4)	248 (89.6)	2700 (92.4)	3274 (91.6)
Other lipid lowering agent	4 (6.8)	51 (7.2)	39 (4.2)	8 (9.0)	58 (7.0)	66 (6.4)	3 (3.0)	58 (5.6)	48 (3.6)	15 (6.0)	167 (6.4)	153 (4.8)
Diuretics	5 (8.6)	202 (27.6)	394 (41.0)	12 (13.4)	192 (23.0)	375 (35.6)	13 (12.8)	293 (27.2)	547 (40.4)	30 (12.0)	687 (26.0)	1316 (39.0)
Calcium antagonist	4 (6.8)	128 (18.0)	265 (28.4)	11 (12.6)	99 (12.0)	251 (24.2)	16 (16.2)	184 (17.6)	362 (27.6)	31 (12.6)	411 (15.8)	878 (26.8)
Oral hypoglycaemic agent	14 (23.0)	256 (34.6)	346 (36.4)	18 (20.2)	232 (27.6)	307 (29.0)	18 (17.8)	352 (32.6)	422 (31.6)	50 (20.0)	840 (31.6)	1075 (32.2)
Insulin	11 (18.0)	164 (22.6)	234 (24.8)	10 (11.4)	164 (19.6)	233 (22.0)	9 (9.0)	280 (26.0)	349 (26.2)	30 (12.0)	608 (23.0)	816 (24.4)
Anti-arrhythmic agent	6 (10.2)	42 (6.0)	70 (7.6)	3 (3.4)	45 (5.4)	80 (7.6)	4 (4.0)	46 (4.4)	82 (6.4)	13 (5.2)	133 (5.2)	232 (7.2)

Total admission days is derived as Outcome date–Admission date + 1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
* For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)
** Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

Table 4.7 Treatments for patients with NSTEMI/UA by gender, NCVD-ACS Registry, 2011-2013

Year	2011		2012		2013		2011-2013	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Total	**1,407**	**585**	**1,580**	**623**	**2,254**	**812**	**5,241**	**2,020**
#^Total admission days								
N	1,385	580	1,552	609	2,230	803	5,167	1,992
Mean (SD)	6.0 (7.2)	6.3 (7.7)	6.0 (6.8)	6.5 (7.2)	6.2 (7.0)	6.5 (8.1)	6.1 (7.0)	6.5 (7.7)
Median (min, max)	4.0 (1.0, 96.0)	4.0 (1.0, 86.0)	4.0 (1.0, 100.0)	4.0 (1.0, 77.0)	4.0 (1.0, 95.0)	4.0 (1.0, 100.0)	4.0 (1.0, 100.0)	4.0 (1.0, 100.0)
IQR	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Missing	22	5	28	14	24	9	74	28
Number of days on CCU								
N	290	85	352	118	338	126	980	329
Mean (SD)	3.6 (3.2)	3.9 (3.1)	3.5 (3.2)	3.7 (4.1)	3.7 (3.6)	3.4 (3.2)	3.6 (3.3)	3.7 (3.5)
Median (min, max)	3.0 (1.0, 23.0)	3.0 (1.0, 19.0)	3.0 (1.0, 24.0)	2.0 (1.0, 23.0)	3.0 (1.0, 30.0)	2.0 (1.0, 25.0)	3.0 (1.0, 30.0)	3.0 (1.0, 25.0)
IQR	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
No admission to CCU	1116	500	1227	503	1915	685	4258	1688
Missing	1	0	1	2	1	1	3	3
Number of days on ICU/CICU								
N	5	2	9	4	34	7	48	13
Mean (SD)	5.8 (6.1)	8.0 (1.4)	3.2 (1.9)	10.3 (8.1)	5.9 (5.3)	3.4 (1.9)	5.4 (5.0)	6.2 (5.4)
Median (min, max)	2.0 (1.0, 13.0)	8.0 (7.0, 9.0)	3.0 (1.0, 7.0)	8.0 (4.0, 21.0)	4.0 (1.0, 26.0)	3.0 (1.0, 6.0)	4.0 (1.0, 26.0)	4.0 (1.0, 21.0)
IQR	11.0	2.0	2.0	12.5	4.0	4.0	4.5	4.0
No admission to ICU/CICU	1,402	583	1,571	619	2,220	805	5,193	2,007
Missing	0	0	0	0	0	0	0	0

Year	2011		2012		2013		2011-2013	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
Total	1,407	585	1,580	623	2,254	812	5,241	2,020
Cardiac catheterisation, No. (%)								
Yes	321 (28.2)	91 (18.8)	364 (27.2)	109 (21.5)	708 (33.7)	208 (27.2)	1,393 (30.4)	408 (23.2)
No	763 (67.2)	369 (76.4)	923 (69.1)	377 (74.5)	1,376 (65.6)	550 (72.0)	3,062 (67.0)	1,296 (74.0)
Number transferred to another centre	52 (4.6)	23 (4.8)	49 (3.7)	20 (4.0)	15 (0.7)	6 (0.8)	116 (2.6)	49 (2.8)
Missing	271	102	244	117	155	48	670	267
Percutaneous Coronary Intervention, No. (%)								
Yes	199 (19.2)	57 (13.8)	256 (20.0)	55 (11.4)	333 (16.4)	81 (10.9)	788 (18.0)	193 (11.8)
No	833 (80.8)	359 (86.2)	1,030 (80.0)	424 (88.6)	1702 (83.4)	661 (88.8)	3,565 (81.8)	1,444 (88.1)
Not Applicable					6 (0.2)	2 (0.3)	6 (0.2)	2 (0.1)
Missing	375	169	294	144	213	68	882	381
CABG, No. (%)								
Yes	29 (2.8)	13 (3.2)	22 (1.8)	6 (1.4)	51 (2.5)	11 (1.5)	102 (2.4)	30 (1.8)
No	1,031 (97.2)	391 (96.8)	1,139 (98.2)	433 (98.6)	1,966 (97.0)	719 (97.7)	4,136 (97.4)	1,543 (97.8)
Not Applicable					11 (0.5)	6 (0.8)	11 (0.2)	6 (0.4)
Missing	347	181	419	184	226	76	992	441
Pre-admission aspirin use, No. (%)								
Yes	641 (49.2)	280 (52.0)	727 (49.0)	245 (42.8)	1,211 (56.6)	440 (57.6)	2,579 (52.4)	965 (51.4)
No	661 (50.8)	259 (48.0)	755 (51.0)	328 (57.2)	931 (43.4)	324 (42.4)	2,347 (47.6)	911 (48.6)
Missing	105	46	98	50	112	48	315	144

Year	2011		2012		2013		2011-2013	
Gender	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Total	**1,407**	**585**	**1,580**	**623**	**2,254**	**812**	**5,241**	**2,020**
Pharmacological therapy given during admission, No. (%)								
Aspirin	1,293 (95.4)	547 (95.4)	1,482 (96.6)	553 (95.0)	2,080 (96.6)	748 (96.8)	4,855 (96.4)	1,848 (96.0)
*ADP antagonist	1,084 (82.0)	435 (78.6)	1,275 (85.6)	467 (82.6)	1,773 (93.0)	651 (93.6)	4,132 (87.6)	1,553 (85.6)
GP receptor inhibitor	40 (3.4)	15 (3.0)	36 (2.6)	10 (1.8)	10 (0.6)	1 (0.2)	86 (2.0)	26 (1.6)
Unfractionated heparin	124 (10.6)	50 (10.0)	151 (10.8)	44 (8.2)	159 (9.0)	52 (8.0)	434 (10.0)	146 (8.6)
LMWH	897 (71.8)	382 (71.4)	1021 (69.6)	386 (68.6)	482 (26.0)	169 (25.4)	2400 (52.6)	937 (53.2)
Fondaparinux					1,284 (72.4)	436 (67.6)	1,284 (72.4)	436 (67.6)
Oral anticoagulant (eg. Warfarin)					45 (2.8)	14 (2.4)	45 (2.8)	14 (2.4)
Beta blocker	880 (68.4)	384 (69.6)	916 (62.4)	335 (59.8)	1,402 (71.4)	478 (69.2)	3,198 (67.8)	1,197 (66.4)
ACE inhibitor	756 (59.4)	338 (62.8)	874 (60.2)	321 (58.2)	1,124 (58.6)	365 (53.2)	2,754 (59.4)	1,024 (57.8)
Angiotensin II receptor blocker	149 (12.4)	55 (11.0)	145 (10.2)	60 (11.2)	153 (8.6)	72 (11.0)	447 (10.2)	187 (11.2)
Statin	1,230 (91.8)	517 (91.6)	1,381 (90.6)	520 (90.2)	1,907 (93.2)	667 (91.6)	4,518 (92.0)	1,704 (91.2)
Other lipid lowering agent	70 (6.0)	24 (4.8)	92 (6.6)	40 (7.6)	91 (5.0)	18 (2.8)	253 (5.8)	82 (4.8)
Diuretics	406 (33.2)	195 (37.2)	395 (27.4)	184 (33.8)	582 (31.4)	271 (40.0)	1,383 (30.6)	650 (37.2)
Calcium antagonist	245 (20.6)	152 (29.6)	230 (16.2)	131 (24.4)	375 (20.8)	187 (28.4)	850 (19.2)	470 (27.6)
Oral hypoglycaemic agent	390 (31.6)	226 (43.6)	374 (26.0)	183 (33.2)	560 (30.4)	232 (34.4)	1,324 (29.4)	641 (36.8)
Insulin	238 (19.6)	171 (33.2)	251 (17.4)	156 (28.4)	431 (23.6)	207 (30.6)	920 (20.6)	534 (30.6)
Anti-arrhythmic agent	85 (7.2)	33 (6.6)	87 (6.2)	41 (7.6)	92 (5.2)	40 (6.2)	264 (6.0)	114 (6.8)

Total admission days is derived as Outcome date-Admission date + 1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
* For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)

Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCVD-ACS Registry, 2011-2013

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##
Total	851	479	561	101	905	607	538	153	1,385	826	660	195	3,141	1,912	1,759	449
#^Total admission days																
N	841	472	552	100	885	601	527	148	1,365	821	654	193	3,091	1,894	1,733	441
Mean (SD)	6.2 (6.8)	5.7 (6.7)	6.3 (9.0)	5.4 (4.0)	6.1 (6.5)	6.1 (7.7)	6.5 (6.8)	5.8 (6.7)	6.3 (6.9)	6.6 (8.0)	6.1 (7.2)	5.5 (7.3)	6.2 (6.8)	6.2 (7.6)	6.3 (7.7)	5.6 (6.5)
Median (min, max)	4.0 (1.0, 95.0)	4.0 (1.0, 89.0)	4.0 (1.0, 96.0)	4.0 (1.0, 20.0)	4.0 (1.0, 100.0)	4.0 (1.0, 89.0)	4.0 (1.0, 70.0)	4.0 (1.0, 64.0)	4.0 (1.0, 73.0)	4.0 (1.0, 100.0)	4.0 (1.0, 85.0)	4.0 (1.0, 63.0)	4.0 (1.0, 100.0)	4.0 (1.0, 100.0)	4.0 (1.0, 96.0)	4.0 (1.0, 64.0)
IQR	4.0	3.0	3.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
Missing	10	7	9	1	20	6	11	5	20	5	6	2	50	18	26	8
Number of days on CCU																
N	190	79	66	40	211	117	68	74	255	92	80	37	656	288	214	151
Mean (SD)	3.7 (3.3)	3.8 (3.4)	3.2 (2.2)	4.3 (3.6)	3.7 (3.6)	3.1 (3.4)	3.8 (3.7)	3.7 (2.8)	3.8 (3.6)	3.8 (3.3)	3.0 (2.6)	3.8 (5.0)	3.7 (3.5)	3.5 (3.4)	3.3 (2.9)	3.9 (3.6)
Median (min, max)	3.0 (1.0, 23.0)	3.0 (1.0, 20.0)	3.0 (1.0, 12.0)	3.0 (1.0, 20.0)	3.0 (1.0, 24.0)	2.0 (1.0, 23.0)	3.0 (1.0, 20.0)	3.0 (1.0, 15.0)	3.0 (1.0, 26.0)	3.0 (1.0, 16.0)	2.0 (1.0, 15.0)	2.0 (1.0, 30.0)	3.0 (1.0, 26.0)	2.0 (1.0, 23.0)	3.0 (1.0, 20.0)	3.0 (1.0, 30.0)
IQR	2.0	2.0	3.0	2.5	2.0	2.0	2.5	3.0	2.0	2.0	2.0	2.0	3.0	2.0	3.0	3.0
No admission to CCU	660	400	495	61	694	489	469	78	1130	733	579	158	2484	1622	1543	297
Missing	0	0	0	0	0	1	1	1	0	1	1	0	1	2	2	1
Number of days on ICU/CICU																
N	3	1	1	2	6	1	5	1	28	6	5	2	37	8	11	5
Mean (SD)	5.3 (6.7)	7.0 (.)	12.0 (.)	5.0 (5.7)	7.0 (7.9)	4.0 (.)	4.0 (2.1)	4.0 (.)	5.2 (4.2)	4.0 (2.0)	4.8 (3.3)	15.0 (15.6)	5.5 (5.0)	4.4 (2.0)	5.1 (3.4)	8.8 (10.0)
Median (min, max)	2.0 (1.0, 13.0)	7.0 (7.0, 7.0)	12.0 (12.0, 12.0)	5.0 (1.0, 9.0)	3.0 (1.0, 21.0)	4.0 (4.0, 4.0)	4.0 (2.0, 7.0)	4.0 (4.0, 4.0)	4.0 (1.0, 22.0)	4.0 (1.0, 6.0)	3.0 (2.0, 10.0)	15.0 (4.0, 26.0)	4.0 (1.0, 22.0)	4.5 (1.0, 7.0)	4.0 (2.0, 12.0)	4.0 (1.0, 26.0)

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##
Total	**851**	**479**	**561**	**101**	**905**	**607**	**538**	**153**	**1,385**	**826**	**660**	**195**	**3,141**	**1,912**	**1,759**	**449**
IQR	12.0	0	0	8.0	10.0	0	3.0	0	4.0	3.0	3.0	22.0	4.0	3.0	5.0	5.0
No admission to ICU/CICU	848	478	560	99	899	606	533	152	1,357	820	655	193	3,104	1,904	1,748	444
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cardiac catheterisation, No. (%)																
Yes	186 (26.2)	94 (23.8)	123 (28.4)	9 (10.7)	193 (25.4)	111 (21.5)	121 (28.0)	48 (36.0)	372 (29.4)	260 (32.5)	203 (33.0)	81 (44.0)	751 (27.5)	465 (27.2)	447 (30.2)	138 (34.4)
No	487 (68.8)	280 (70.8)	292 (67.6)	73 (87.0)	536 (70.4)	391 (75.7)	293 (67.8)	80 (60.2)	881 (69.6)	534 (67.0)	409 (66.4)	102 (55.4)	1904 (69.6)	1205 (70.6)	994 (67.2)	255 (63.6)
Number transferred to another centre	35 (5.0)	21 (5.4)	17 (4.0)	2 (2.3)	32 (4.2)	14 (2.8)	18 (4.2)	5 (3.8)	12 (1.0)	4 (0.5)	4 (0.6)	1 (0.6)	79 (2.9)	39 (2.2)	39 (2.6)	8 (2.0)
Missing	143	84	129	17	144	91	106	20	120	28	44	11	407	203	279	48
Percutaneous Coronary Intervention, No. (%)																
Yes	117 (18.0)	59 (16.6)	78 (21.6)	2 (2.6)	126 (17.4)	71 (14.2)	83 (20.0)	31 (24.8)	177 (14.4)	113 (14.4)	81 (13.4)	43 (25.2)	420 (16.2)	243 (14.8)	242 (17.5)	76 (20.4)
No	536 (82.0)	296 (83.4)	284 (78.4)	76 (97.4)	599 (82.6)	429 (85.8)	332 (80.0)	94 (75.2)	1043 (85.2)	668 (85.4)	524 (86.4)	128 (74.8)	2178 (83.6)	1393 (85.0)	1140 (82.4)	298 (79.6)
Not Applicable									5 (0.4)	2 (0.2)	1 (0.2)	0 (0)	5 (0.2)	2 (0.2)	1 (0.1)	0 (0)
Missing	198	124	199	23	180	107	123	28	160	43	54	24	538	274	376	75
CABG, No. (%)																
Yes	17 (2.6)	6 (1.6)	17 (4.4)	2 (2.8)	4 (0.6)	9 (2.0)	11 (3.0)	4 (3.8)	32 (2.6)	21 (2.8)	6 (1.0)	3 (2.0)	53 (2.1)	36 (2.2)	34 (2.4)	9 (2.7)
No	623 (97.4)	364 (98.4)	364 (95.6)	71 (97.2)	653 (99.4)	458 (98.0)	358 (97.0)	103 (96.2)	1192 (97.0)	744 (97.0)	598 (97.7)	151 (97.4)	2468 (97.7)	1566 (97.6)	1320 (97.0)	325 (97.0)
Not Applicable									6 (0.4)	2 (0.2)	8 (1.3)	1 (0.6)	6 (0.2)	2 (0.2)	8 (0.6)	1 (0.3)
Missing	211	109	180	28	248	140	169	46	155	59	48	40	614	308	397	114

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others	Malay	Chinese	Indian	##Others
Total	851	479	561	101	905	607	538	153	1,385	826	660	195	3,141	1,912	1,759	449
Pre-admission aspirin use, No. (%)																
Yes	370 (47.0)	221 (49.0)	289 (56.8)	41 (43.6)	391 (46.4)	260 (46.0)	256 (51.2)	65 (44.8)	717 (55.2)	451 (56.8)	404 (64.6)	79 (42.2)	1478 (50.4)	932 (51.4)	949 (58.0)	185 (43.4)
No	418 (53.0)	230 (51.0)	219 (43.2)	53 (56.4)	453 (53.6)	306 (54.0)	244 (48.8)	80 (55.2)	581 (44.8)	344 (43.2)	222 (35.4)	108 (57.8)	1452 (49.6)	880 (48.6)	685 (42.0)	241 (56.6)
Missing	63	28	53	7	61	41	38	8	87	31	34	8	211	100	125	23
Pharmacological therapy given during admission, No. (%)																
Aspirin	789 (96.2)	450 (95.4)	510 (94.4)	91 (95.8)	828 (95.8)	567 (96.4)	493 (96.2)	147 (98.0)	1270 (96.8)	761 (96.0)	607 (96.6)	190 (99.0)	2,887 (96.4)	1,778 (96.0)	1,610 (95.8)	428 (98.0)
*ADP antagonist	648 (80.4)	373 (82.0)	433 (82.4)	65 (73.8)	705 (83.8)	494 (85.4)	426 (85.6)	117 (85.4)	1070 (94.0)	669 (93.4)	533 (93.0)	152 (87.8)	2,423 (87.0)	1,536 (87.8)	1,392 (87.2)	334 (84.0)
GP receptor inhibitor	25 (3.4)	12 (3.0)	15 (3.2)	3 (3.4)	15 (1.8)	12 (2.2)	13 (2.8)	6 (4.8)	7 (0.6)	4 (0.6)	0 (0)	0 (0)	47 (1.8)	28 (1.8)	28 (1.8)	9 (2.4)
Unfractionated heparin	90 (12.6)	34 (8.4)	41 (8.6)	9 (10.6)	79 (10.0)	40 (7.2)	66 (14.0)	10 (8.0)	115 (11.0)	37 (5.4)	53 (9.8)	6 (3.6)	284 (11.2)	111 (6.8)	160 (10.8)	25 (6.6)
LMWH	517 (68.2)	329 (76.4)	363 (72.4)	70 (75.2)	555 (67.2)	410 (71.6)	325 (65.8)	117 (84.2)	253 (23.4)	200 (28.4)	142 (25.6)	56 (32.2)	1325 (49.6)	939 (55.0)	830 (53.6)	243 (59.8)
Fondaparinux									771 (74.0)	464 (69.6)	403 (73.6)	82 (50.4)	771 (74.0)	464 (69.6)	403 (73.6)	82 (50.4)
Oral anticoagulant (eg. Warfarin)									22 (2.4)	18 (2.8)	12 (2.4)	7 (4.4)	22 (2.4)	18 (2.8)	12 (2.4)	7 (4.4)
Beta blocker	521 (66.8)	326 (72.6)	357 (68.8)	60 (66.6)	518 (62.6)	350 (61.8)	299 (60.2)	84 (60.8)	815 (70.4)	532 (72.8)	419 (72.0)	114 (62.0)	1854 (67.0)	1208 (69.2)	1075 (67.4)	258 (62.6)
ACE inhibitor	478 (61.8)	254 (58.2)	314 (61.4)	48 (52.8)	494 (60.6)	315 (56.0)	316 (64.8)	70 (51.4)	664 (58.6)	391 (54.8)	344 (59.6)	90 (50.2)	1636 (60.0)	960 (56.0)	974 (61.8)	208 (51.2)
Angiotensin II receptor blocker	88 (12.2)	45 (11.0)	61 (12.6)	10 (11.8)	78 (9.8)	62 (11.2)	55 (11.6)	10 (7.8)	92 (8.8)	62 (9.0)	54 (10.0)	17 (10.0)	258 (10.0)	169 (10.2)	170 (11.4)	37 (9.6)

Year	2011				2012				2013				2011-2013			
ACS Stratum	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##	Malay	Chinese	Indian	Others##
Total	**851**	**479**	**561**	**101**	**905**	**607**	**538**	**153**	**1,385**	**826**	**660**	**195**	**3,141**	**1,912**	**1,759**	**449**
Statin	740 (91.2)	418 (90.8)	502 (93.4)	87 (92.6)	778 (90.8)	513 (87.6)	469 (91.4)	141 (96.0)	1141 (93.2)	707 (92.4)	557 (92.6)	169 (91.4)	2,659 (92.0)	1,638 (90.4)	1,528 (92.6)	397 (93.2)
Other lipid lowering agent	42 (6.0)	25 (6.2)	25 (5.2)	2 (2.4)	54 (6.8)	38 (7.0)	28 (6.0)	12 (9.4)	59 (5.6)	20 (3.0)	27 (5.0)	3 (1.8)	155 (6.0)	83 (5.0)	80 (5.4)	17 (4.4)
Diuretics	242 (33.0)	155 (35.8)	172 (34.6)	32 (36.8)	242 (29.8)	152 (27.2)	149 (30.8)	36 (27.6)	393 (35.6)	241 (34.4)	187 (33.6)	32 (18.4)	877 (33.2)	548 (32.4)	508 (33.0)	100 (25.6)
Calcium antagonist	157 (22.0)	98 (23.6)	129 (26.8)	13 (15.2)	154 (19.4)	102 (18.4)	79 (16.6)	26 (20.4)	251 (23.6)	169 (24.8)	105 (19.2)	37 (21.8)	562 (21.8)	369 (22.4)	313 (20.8)	76 (19.8)
Oral hypoglycaemic agent	241 (32.6)	131 (31.2)	218 (43.0)	26 (30.2)	215 (26.6)	133 (24.0)	186 (38.0)	23 (17.8)	327 (30.0)	196 (28.4)	228 (40.8)	41 (23.6)	783 (29.8)	460 (27.6)	632 (40.6)	90 (23.2)
Insulin	168 (23.0)	72 (17.6)	154 (30.6)	15 (17.4)	151 (18.8)	91 (16.2)	148 (30.2)	17 (13.2)	291 (26.8)	132 (19.0)	193 (34.8)	22 (12.8)	610 (23.2)	295 (17.8)	495 (32.0)	54 (14.0)
Anti-arrhythmic agent	58 (8.2)	29 (7.2)	20 (4.2)	11 (12.8)	58 (7.2)	35 (6.4)	25 (5.2)	10 (7.8)	63 (6.0)	43 (6.4)	17 (3.2)	9 (5.2)	179 (7.0)	107 (6.6)	62 (4.2)	30 (7.8)

Total admission days is derived as Outcome date-Admission date + 1
^ Acceptable range is different between the previous report (2009 & 2010) and this current version (2011-2013)
* For CRF version 2013, details of the breakdown are available for ticlopidine, clopidogrel, prasugrel and ticagrelor. These are grouped as ADP antagonist in this current version (2011-2013)
"Others" includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

Table 4.9 Treatments for patients with ACS by type of participating centres, NCVD-ACS Registry, 2011-2013

Year	2011						2012					
ACS stratum	STEMI		NSTEMI		Unstable Angina		STEMI		NSTEMI		Unstable Angina	
	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre	Physician centre
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Total	**1,373**	**682**	**923**	**171**	**784**	**114**	**1,785**	**601**	**916**	**230**	**953**	**104**
Fibrinolytic therapy, No (%)												
Given at this centre	633 (48.2)	498 (74.7)					665 (38.4)	444 (74.8)				
Given at another centre prior to transfer	354 (27.0)	92 (13.8)					524 (30.2)	53 (9.0)				
Not given-proceeded directly to primary angioplasty	118 (9.0)	0 (0)					264 (15.2)	0 (0)				
Not given-Missed thrombolysis	167 (12.6)	49 (7.4)					216 (12.4)	63 (10.6)				
Not given-Patient refusal	6 (0.4)	1 (0.2)					4 (0.2)	4 (0.6)				
Not given-Contraindicated	37 (2.8)	26 (3.9)					62 (3.6)	30 (5.0)				
Not applicable	3	0					6	0				
Not available	11	0					9	2				
Missing	44	16					35	5				
Percutaneous coronary intervention, No (%)												
Yes	397 (33.2)	0 (0)	191 (25.8)	0 (0)	65 (12.4)	0 (0)	744 (45.0)	0 (0)	218 (30.0)	0 (0)	93 (11.6)	0 (0)
No	800 (66.8)	453 (100.0)	551 (74.2)	137 (100.0)	461 (87.6)	43 (100.0)	912 (55.0)	497 (100.0)	510 (70.0)	178 (100.0)	709 (88.4)	57 (100.0)
Not applicable												
Missing	176	229	181	34	258	71	129	104	188	52	151	47
CABG, No (%)												
Yes	4 (0.4)	0 (0)	29 (3.8)	0 (0)	13 (2.2)	0 (0)	16 (1.0)	0 (0)	17 (2.6)	0 (0)	11 (1.4)	0 (0)
No	1175 (99.6)	491 (100.0)	720 (96.2)	102 (100.0)	571 (97.8)	29 (100.0)	1520 (99.0)	433 (100.0)	655 (97.4)	133 (100.0)	746 (98.6)	38 (100.0)
Not applicable												
Missing	194	191	174	69	200	85	249	168	244	97	196	66

Year	2013						2011-2013					
ACS stratum	STEMI		NSTEMI		Unstable Angina		STEMI		NSTEMI		Unstable Angina	
	Cardiologist centre No. (%)	Physician centre No. (%)	Cardiologist centre No. (%)	Physician centre No. (%)	Cardiologist centre No. (%)	Physician centre No. (%)	Cardiologist centre No. (%)	Physician centre No. (%)	Cardiologist centre No. (%)	Physician centre No. (%)	Cardiologist centre No. (%)	Physician centre No. (%)
Total	2536	525	1,503	99	1,399	65	5,694	1,808	3,342	500	3,136	283
Fibrinolytic therapy, No (%)												
Given at this centre	1,039 (41.6)	438 (84.6)					2,337 (42.2)	1,380 (77.6)				
Given at another centre prior to transfer	724 (29.0)	33 (4.4)					1,602 (28.8)	168 (9.4)				
Not given-proceeded directly to primary angioplasty	308 (12.4)	0 (0)					690 (12.4)	0 (0)				
Not given-Missed thrombolysis	295 (11.8)	37 (7.2)					678 (12.2)	149 (8.4)				
Not given-Patient refusal	18 (0.8)	1 (0.2)					28 (0.6)	6 (0.4)				
Not given-Contraindicated	111 (4.4)	19 (3.6)					210 (3.8)	75 (4.2)				
Not applicable	12	3					21	3				
Not available	24	2					44	4				
Missing	5	2					84	23				
Percutaneous coronary intervention, No (%)												
Yes	1,067 (44.8)	0 (0)	276 (19.4)	0 (0)	138 (10.8)	0 (0)	2,208 (42.2)	0 (0)	685 (23.8)	0 (0)	296 (11.4)	0 (0)
No	1,304 (54.8)	425 (95.8)	1,141 (80.4)	60 (96.8)	1,127 (88.8)	35 (100.0)	3,016 (57.6)	1,375 (98.6)	2,202 (76.2)	375 (99.4)	2,297 (88.4)	135 (100.0)
Not applicable	8 (0.4)	19 (4.2)	2 (0.2)	2 (3.2)	4 (0.4)	0 (0)	8 (0.2)	19 (1.4)	2 (0.0)	2 (0.6)	4 (0.2)	0 (0)
Missing	157	81	84	37	130	30	462	414	453	123	539	148
CABG, No (%)												
Yes	34 (1.5)	0 (0)	37 (2.7)	0 (0)	25 (2.0)	0 (0)	54 (1.0)	0 (0)	83 (3.0)	0 (0)	49 (1.8)	0 (0)
No	2,239 (97.8)	370 (94.0)	1,351 (97.0)	54 (96.4)	1,246 (97.2)	34 (100.0)	4,934 (98.6)	1,294 (98.2)	2,726 (96.9)	289 (99.4)	2,563 (97.8)	101 (100.0)
Not applicable	16 (0.7)	24 (6.0)	4 (0.3)	2 (3.6)	11 (0.8)	0 (0)	16 (0.4)	24 (1.8)	4 (0.1)	2 (0.6)	11 (0.4)	0 (0)
Missing	247	131	111	43	117	31	690	490	529	209	513	182

CHAPTER 5: OUTCOME

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Summary

1. There was improvement in the overall 30-day outcome compared to the last NCVD-ACS Registry in 2006-2010.

2. STEMI remained as the highest risk of mortality. Advanced age, female gender and higher TIMI risk score and Killip class were identified as predictors of mortality.

3. Patients who received fibrinolytic therapy had better outcome than those who did not.

4. Hospitals with cardiac catheterisation facility registered lower in-hospital and 30-day mortality.

5. Patients who underwent urgent cardiac catheterisation and urgent PCI had better outcome than those who did not.

Overall in-hospital and 30-day mortality

From the year 2011 to 2013, the overall (all-cause) in-hospital and 30-day mortality rate had been constant at around 7.6% and 9%, respectively. [Table 5.1] There was no obvious change in the trend of mortality across all ACS stratums within this three-year period. The STEMI group appeared to have the highest mortality rate. In-hospital mortality for STEMI was (10.6%) followed by NSTEMI (7.6%) and UA (1.2%). The 30-day mortality for STEMI was (11.8%) followed by NSTEMI (9.2%) and UA (2.4%). [Table 5.8] There was similar in-hospital outcome between patients treated at physician and cardiologist centres. However, we noted a slightly favourable outcome in the patients treated at the cardiologist-centre at 30-day (mortality physician 9.2% vs. cardiologist 8.2%). [Table 5.7] There was a marked improvement in the overall 30-day mortality rate compared to our previous 2006 to 2010 registry (9% vs. 14%) [1]. Nevertheless, our overall mortality rate was still far higher than that of other worldwide registries[2-4].

Outcome by Patients Characteristics

STEMI

Multivariate analysis of patients' baseline characteristics showed that female gender, higher killip class at presentation and age >60 years were poor prognostic factors for in hospital mortality. No significant difference was noted in adjusted mortality among the three major ethnic groups. Within all the conventional cardiovascular risk factors, we found that hypertensives and HF had higher adjusted mortality. The adjusted mortality risk was also higher with higher TIMI risk score. [Table 5.11.1]

NSTEMI/UA

The adjusted mortality showed that age was an important determinant of in-hospital mortality. Female gender seemed to have similar outcome compared to their male counterpart unlike the STEMI group and the Indian ethnic group had a better outcome compared to the Malays and Chinese. Higher Killip class also conferred poorer outcome in this group of patients. Among the cardiovascular risk factors, diabetes mellitus was associated with a significantly worse outcome. [Table 5.11.2]

Outcome of patients by treatment

STEMI
Patients who received fibrinolytics and in-hospital PCI achieved a better survival rate at discharge and 30-day post discharge than those who did not receive thrombolytics. Patients who had PCI seemed to do better compared to those treated with fibrinolytics but any definite conclusion required further evaluation as there bound to be overlap between the two groups. [Table 5.11.1 & 5.11.3]

NSTEMI/UA
Patients who had cardiac catheterisation had a better outcome at in-hospital and 30-day period. [Table 5.11.2 & 5.11.4] Those who underwent CABG had a poorer outcome at discharge but the 30-day outcome was favourable for this group of patients as the mortality rate after discharge until 30-day follow up was 0% across the study period (in-hospital mortality equals to 30-day mortality). [Table 5.10.2]

Significant Prognostic Factors

Age
Age was a very significant determinant particularly for patients with UA/NSTEMI. For UA/NSTEMI compared to younger aged patients (20-40 years old), those aged between 40-60 years and above 60 years had a hazard ratio of 9.31 and 17.16 for in-hospital mortality, and 10.61 and 20.45 for 30-day mortality, respectively. [Table 5.11.2 & 5.11.4]

Gender
Compared to men, women appeared to have marginally but significantly higher risk of mortality after STEMI. [Table 5.11.1 & 5.11.3]

Ethnicity
Using Malays (the predominant group) as the standard, patients of Indian origin had significantly lower risk for NSTEMI/UA whereas patients not belonging to the three main ethnic groups (such as Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner groups) had lower risk for STEMI only. There was no difference between Chinese and Malays for STEMI and NSTEMI/UA. [Table 5.11.1 & 5.11.2]

Killip Class
Killip Class was an important determinant of mortality. Patients in Killip Class IV had hazard ratio up to 3.49 compared to class I in STEMI and 7.21 in NSTEMI/UA. [Table 5.11.1 & 5.11.2]

PCI and cardiac catheterisation
Patients who underwent cardiac catheterisation during index admission had better outcome than those who did not. This was most obvious for NSTEMI/UA for in-hospital mortality [HR 0.45 (95%CI 0.34-0.59). For STEMI, patients who underwent PCI on same admission had lower risk of in-hospital and 30-day mortality. [Table 5.11.1, 5.11.2 & 5.11.3]

Fibrinolytic therapy
For patients with STEMI, the use of fibrinolytic therapy was associated with significantly lower in-hospital and 30-day mortality. [Table 5.11.1 & 5.11.3]

TIMI Risk Score for STEMI
The TIMI risk score continued to be a useful predictor of mortality for patients with STEMI. [Table 5.11.1 & 5.11.3]

References:

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Table 5.1 Outcomes for patients with ACS by year, NCVD-ACS Registry, 2011-2013

	+Outcome	Overall outcome			
		Outcome at discharge		30-day*	
		No.	%	No.	%
2011	Alive	3,729	92.2	3,681	91.0
	Death	318	7.8	366	9.0
2012	Alive	4,234	92.2	4,173	91.0
	Death	355	7.8	416	9.0
2013	Alive	5,670	92.6	5,586	91.2
	Death	457	7.4	541	8.8
2011 - 2013	Alive	13,633	92.4	13,440	91.0
	Death	1130	7.6	1323	9.0

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.2 Overall outcomes for patients with ACS by age group (years), NCVD-ACS Registry, 2011-2013

	+Outcome	In-hospital						30-day*					
		Young		Middle-age		Elderly		Young		Middle-age		Elderly	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2011	Alive	236	96.8	1,896	94.8	1,597	88.6	234	96.0	1,883	94.2	1,564	86.6
	Died	8	3.2	103	5.2	207	11.4	10	4.0	116	5.8	240	13.4
2012	Alive	300	97.8	2,119	95.8	1,815	87.6	299	97.4	2,101	95.0	1,773	85.6
	Died	7	2.2	92	4.2	256	12.4	8	2.6	110	5.0	298	14.4
2013	Alive	398	97.8	2889	95.0	2383	89.0	395	97.0	2859	94.0	2332	87.2
	Died	9	2.2	155	5.0	293	11.0	12	3.0	185	6.0	344	12.8
2011 - 2013	Alive	934	97.4	6904	95.2	5795	88.4	928	96.8	6843	94.4	5669	86.6
	Died	24	2.6	350	4.8	756	11.6	30	3.2	411	5.6	882	13.4

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital
Note: Young is defined as age from 20 to less than 40 years, middle-aged is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

Table 5.3 Overall outcomes for patients with ACS by gender, NCVD-ACS Registry, 2011-2013

| | +Outcome | In-hospital | | | | 30-day* | | | |
| | | Male | | Female | | Male | | Female | |
		No.	%	No.	%	No.	%	No.	%
2011	Alive	2,913	92.6	816	90.4	2,882	91.6	799	88.6
	Died	232	7.4	86	9.6	263	8.4	103	11.4
2012	Alive	3,381	93.2	853	88.8	3,341	92.0	832	86.6
	Died	247	6.8	108	11.2	287	8.0	129	13.4
2013	Alive	4,536	93.2	1,134	89.8	4,473	92.0	1,113	88.2
	Died	329	6.8	128	10.2	392	8.0	149	11.8
2011 - 2013	Alive	10,830	93.0	2,803	89.6	10,696	92.0	2,744	87.8
	Died	808	7.0	322	10.4	942	8.0	381	12.2

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.4 Overall outcomes for patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2011-2013

| | +Outcome | In-hospital | | | | | | 30-day* | | | | | |
| | | Yes | | No | | Unknown | | Yes | | No | | Unknown | |
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2011	Alive	1,587	91.2	1,690	92.8	180	90.0	1,559	89.4	1,675	92.0	179	89.5
	Died	155	8.8	131	7.2	20	10.0	183	10.6	146	8.0	21	10.5
2012	Alive	1,798	91.0	1,885	93.2	230	93.4	1,763	89.4	1,864	92.2	229	93.0
	Died	176	9.0	138	6.8	16	6.6	211	10.6	159	7.8	17	7.0
2013	Alive	2,322	90.4	2,642	94.6	315	91.0	2,273	88.6	2,610	93.4	314	90.8
	Died	246	9.6	152	5.4	31	9.0	295	11.4	184	6.6	32	9.2
2011 - 2013	Alive	5,707	90.8	6,217	93.6	725	91.6	5,595	89.0	6,149	92.6	722	91.2
	Died	577	9.2	421	6.4	67	8.4	689	11.0	489	7.4	70	8.8

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.5 Overall outcomes for patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2011-2013

	+Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2011	Alive	2,318	91.0	1,044	94.4	134	92.4	2,283	89.6	1,035	93.6	133	91.8
	Died	229	9.0	62	5.6	11	7.6	264	10.4	71	6.4	12	8.2
2012	Alive	2,562	91.6	1,171	93.0	193	95.6	2,519	90.0	1,157	91.8	192	95.0
	Died	235	8.4	88	7.0	9	4.4	278	10.0	102	8.2	10	5.0
2013	Alive	3,319	91.4	1,758	94.6	235	91.0	3,252	89.6	1,743	93.8	235	91.0
	Died	311	8.6	99	5.4	23	9.0	378	10.4	114	6.2	23	9.0
2011 - 2013	Alive	8,199	91.4	3,973	94.2	562	92.8	8,054	89.8	3,935	93.2	560	92.6
	Died	775	8.6	249	5.8	43	7.2	920	10.2	287	6.8	45	7.4

+ The outcome data is derived based on data matching with the National Death Register
*Includes patients who died in-hospital

Table 5.6 Overall outcomes for patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2011-2013

	+Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2011	Alive	1,323	90.6	1,667	93.4	427	90.4	1,309	89.8	1,643	92.0	423	89.6
	Died	136	9.4	118	6.6	45	9.6	150	10.2	142	8.0	49	10.4
2012	Alive	1,435	93.4	1,988	91.8	472	92.0	1,412	91.8	1,958	90.4	467	91.0
	Died	103	6.6	177	8.2	41	8.0	126	8.2	207	9.6	46	9.0
2013	Alive	1,975	94.0	2,730	92.0	549	90.2	1,950	92.8	2,678	90.2	544	89.4
	Died	128	6.0	240	8.0	59	9.8	153	7.2	292	9.8	64	10.6
2011 - 2013	Alive	4,733	92.8	6,385	92.2	1,448	90.8	4,671	91.6	6,279	90.8	1,434	90.0
	Died	367	7.2	535	7.8	145	9.2	429	8.4	641	9.2	159	10.0

+ The outcome data is derived based on data matching with the National Death Register
*Includes patients who died in-hospital

Table 5.7 Overall outcomes for patients by types of centre, NCVD-ACS Registry, 2011-2013

	+Outcome	In-hospital				30-day*			
		Physician Centre		Cardiologist Centre		Physician Centre		Cardiologist Centre	
		No.	%	No.	%	No.	%	No.	%
2011	**Alive**	2,839	92.2	890	92.0	2,801	91.0	880	91.0
	Died	241	7.8	77	8.0	279	9.0	87	9.0
2012	**Alive**	3,368	92.2	866	92.6	3,315	90.8	858	91.8
	Died	286	7.8	69	7.4	339	9.2	77	8.2
2013	**Alive**	5,031	92.6	639	92.8	4,948	91.0	638	92.6
	Died	407	7.4	50	7.2	490	9.0	51	7.4
2011 - 2013	**Alive**	11,238	92.4	2,395	92.4	11,064	90.8	2,376	91.8
	Died	934	7.6	196	7.6	1108	9.2	215	8.2

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.8 Overall outcomes for patients with ACS by ACS stratum, NCVD-ACS Registry, 2011-2013

	+Outcome	In-hospital						30-day*					
		STEMI		NSTEMI		UA		STEMI		NSTEMI		UA	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2011	**Alive**	1,841	89.6	999	91.4	889	99.0	1,813	88.2	985	90.0	883	98.4
	Died	214	10.4	95	8.6	9	1.0	242	11.8	109	10.0	15	1.6
2012	**Alive**	2,120	88.8	1,073	93.6	1,041	98.4	2,095	87.8	1,053	91.8	1,025	97.0
	Died	266	11.2	73	6.4	16	1.6	291	12.2	93	8.2	32	3.0
2013	**Alive**	2,744	89.6	1,478	92.2	1,448	99.0	2,709	88.6	1,448	90.4	1,429	97.6
	Died	317	10.4	124	7.8	16	1.0	352	11.4	154	9.6	35	2.4
2011 - 2013	**Alive**	6,705	89.4	3,550	92.4	3,378	98.8	6,617	88.2	3,486	90.8	3,337	97.6
	Died	797	10.6	292	7.6	41	1.2	885	11.8	356	9.2	82	2.4

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.9.1 Overall outcomes for patients with STEMI by fibrinolytic therapy, NCVD-ACS Registry, 2011-2013

	+Outcome	Fibrinolytic Therapy							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	1,418	90.0	358	88.4	1,402	89.0	349	86.2
	Died	159	10.0	47	11.6	175	11.0	56	13.8
2012	Alive	1,521	90.2	551	85.6	1,508	89.4	540	84.0
	Died	165	9.8	92	14.4	178	10.6	103	16.0
2013	Alive	2,015	90.6	686	87.0	1,990	89.4	676	85.6
	Died	209	9.4	103	13.0	234	10.6	113	14.4
2011 - 2013	Alive	4,954	90.2	1,595	86.8	4,900	89.4	1,565	85.2
	Died	533	9.8	242	13.2	587	10.6	272	14.8

+ *The outcome data is derived based on data matching with the National Death Register*
* *Includes patients who died in-hospital*

Table 5.9.2 Overall outcomes for patients with STEMI by Percutaneous Coronary Intervention at admission, NCVD-ACS Registry, 2011-2013

	+Outcome	Percutaneous Coronary Intervention (PCI)							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	376	93.8	1,096	87.4	366	91.2	1,087	86.8
	Died	25	6.2	157	12.6	35	8.8	166	13.2
2012	Alive	682	91.2	1,235	87.6	673	90.0	1,222	86.8
	Died	65	8.8	174	12.4	74	10.0	187	13.2
2013	Alive	987	92.2	1,523	88.0	972	90.8	1,504	87.0
	Died	83	7.8	206	12.0	98	9.2	225	13.0
2011 - 2013	Alive	2,045	92.2	3,854	87.8	2,011	90.6	3,813	86.8
	Died	173	7.8	537	12.2	207	9.4	578	13.2

+ *The outcome data is derived based on data matching with the National Death Register*
* *Includes patients who died in-hospital*

Table 5.9.3 Overall outcomes for patients with STEMI by CABG at admission, NCVD-ACS Registry, 2011-2013

	+Outcome	Coronary Artery Bypass Graft (CABG)							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	14	100.0	1,488	89.4	14	100.0	1,464	87.8
	Died	0	0	178	10.6	0	0	202	12.2
2012	Alive	14	87.5	1,749	89.6	13	81.2	1,729	88.6
	Died	2	12.5	204	10.4	3	18.8	224	11.4
2013	Alive	36	100.0	2,322	89.0	36	100.0	2,290	87.8
	Died	0	0	287	11.0	0	0	319	12.2
2011 - 2013	Alive	64	97.0	5,559	89.2	63	95.4	5,483	88.0
	Died	2	3.0	669	10.8	3	4.6	745	12.0

+ *The outcome data is derived based on data matching with the National Death Register*
* *Includes patients who died in-hospital*

Table 5.9.4 Overall outcomes for patients with STEMI by pre-admission aspirin use, NCVD-ACS Registry, 2011-2013

	+Outcome	STEMI by pre-admission aspirin use							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	326	87.4	1,423	90.0	319	85.6	1,402	88.6
	Died	47	12.6	158	10.0	54	14.4	179	11.4
2012	Alive	400	88.0	1,625	89.6	395	86.8	1,605	88.6
	Died	55	12.0	188	10.4	60	13.2	208	11.4
2013	Alive	521	86.6	2,094	90.6	513	85.2	2,067	89.4
	Died	81	13.4	219	9.4	89	14.8	246	10.6
2011 - 2013	Alive	1,247	87.2	5,142	90.0	1,227	85.8	5,074	89.0
	Died	183	12.8	565	10.0	203	14.2	633	11.0

+ *The outcome data is derived based on data matching with the National Death Register*
* *Includes patients who died in-hospital*

Table 5.10.1 Overall outcomes for patients with NSTEMI/UA by Percutaneous Coronary Intervention at admission, NCVD-ACS Registry, 2011-2013

	+Outcome	Percutaneous Coronary Intervention (PCI)							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	248	96.8	1,103	92.6	247	96.4	1,090	91.4
	Died	8	3.2	89	7.4	9	3.6	102	8.6
2012	Alive	300	96.4	1,387	95.4	297	95.4	1,358	93.4
	Died	11	3.6	67	4.6	14	4.6	96	6.6
2013	Alive	402	97.2	2,253	95.4	399	96.4	2,211	93.6
	Died	12	2.8	110	4.6	15	3.6	152	6.4
2011 - 2013	Alive	950	96.8	4,743	94.6	943	96.2	4,659	93.0
	Died	31	3.2	266	5.4	38	3.8	350	7.0

+ *The outcome data is derived based on data matching with the National Death Register*
Includes patients who died in-hospital

Table 5.10.2 Overall outcomes for patients with NSTEMI/UA by CABG at admission, NCVD-ACS Registry, 2011-2013

	+Outcome	Coronary Artery Bypass Graft (CABG)							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	Alive	39	92.8	1,334	93.8	39	92.8	1,314	92.4
	Died	3	7.2	88	6.2	3	7.2	108	7.6
2012	Alive	25	89.2	1,506	95.8	25	89.2	1,474	93.8
	Died	3	10.8	66	4.2	3	10.8	98	6.2
2013	Alive	59	95.2	2,566	95.6	59	95.2	2,518	93.8
	Died	3	4.8	119	4.4	3	4.8	167	6.2
2011 - 2013	Alive	123	93.2	5,406	95.2	123	93.2	5,306	93.4
	Died	9	6.8	273	4.8	9	6.8	373	6.6

+ *The outcome data is derived based on data matching with the National Death Register*
* *Includes patients who died in-hospital*

Table 5.10.3 Overall outcomes for patients with NSTEMI/UA by pre-admission aspirin use, NCVD-ACS Registry, 2011-2013

	+Outcome	Pre-admission aspirin use							
		In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2011	**Alive**	888	96.4	858	93.2	880	95.6	847	92.0
	Died	33	3.6	62	6.8	41	4.4	73	8.0
2012	**Alive**	949	97.6	1,026	94.8	928	95.4	1,012	93.4
	Died	23	2.4	57	5.2	44	4.6	71	6.6
2013	**Alive**	1582	95.8	1,193	95.0	1,554	94.2	1,172	93.4
	Died	69	4.2	62	5.0	97	5.8	83	6.6
2011 - 2013	**Alive**	3419	96.4	3,077	94.4	3,362	94.8	3,031	93.0
	Died	125	3.6	181	5.6	182	5.2	227	7.0

+ The outcome data is derived based on data matching with the National Death Register
* Includes patients who died in-hospital

Table 5.11.1 Prognostic factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2011-2013 (Multivariable Analysis)

Factors	N	Hazard ratio	95% CI		^p-value
Age group, years					
20 - <40 (ref)	655	1.00			
40 - <60	4,089	1.37	0.89	2.11	0.149
≥60	2,758	1.89	1.23	2.90	0.004
Gender					
Male (ref)	6,397	1.00			
Female	1,105	1.21	1.02	1.44	0.027
***Ethnic group**					
Malay (ref)	4,318	1.00			
Chinese	1,262	0.87	0.72	1.05	0.148
Indian	1,145	0.90	0.73	1.10	0.293
Others	777	0.60	0.43	0.84	0.003
Killip classification					
I (ref)	4,135	1.00			
II	1,366	1.27	1.00	1.61	0.054
III	342	1.98	1.49	2.64	<0.001
IV	983	3.49	2.82	4.31	<0.001
Not stated/inadequately described/missing	676	1.43	1.04	1.97	0.026
Percutaneous Coronary Intervention					
No (ref)	5,031	1.00			
Yes	2,471	0.74	0.58	0.94	0.015
Cardiac catheterisation					
No (ref)	4,689	1.00			
Yes	2,813	0.75	0.59	0.95	0.016
TIMI risk score					
0-2 (ref)	2,241	1.00			
3-4	2,286	1.82	1.27	2.60	0.001
5-7	2,322	3.37	2.39	4.76	<0.001
>7	653	6.40	4.40	9.31	<0.001
Fibrinolytic therapy					
Not given (ref)	1,875	1.00			
Given	5,627	0.77	0.66	0.90	0.001

Factors	N	Hazard ratio	95% CI		^p-value
Smoking					
Never (ref)	2,241				
Former (quit >30 days)	1,283				
Current (any tobacco use within last 30 days)	3,825				
Unknown	153				
Family history of premature cardiovascular disease					
No (ref)	5,326	1.00			
Yes	957	1.04	0.79	1.37	0.790
Unknown	1,219	1.26	1.05	1.51	0.011
Dyslipidaemia					
No (ref)	4,133				
Yes	2,224				
Unknown	1,145				
Hypertension					
No (ref)	2,774	1.00			
Yes	4,259	1.41	1.16	1.72	<0.001
Unknown	469	0.63	0.40	1.01	0.055
Diabetes					
No (ref)	3,913	1.00			
Yes	3,016	1.19	1.00	1.42	0.052
Unknown	573	1.39	0.95	2.02	0.086
Heart failure					
No (ref)	6,803	1.00			
Yes	277	1.42	1.11	1.82	0.006
Unknown	422	0.89	0.67	1.19	0.431

* 'Others' includes OrangAsli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner
^ using Cox regression with backward stepwise variable selection

Table 5.11.2 Prognostic factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2011-2013 (Multivariable analysis)

Factors	N	Hazard ratio	95% CI		^p-value
Age group, years					
20 - <40 (ref)	303	1.00			
40 - <60	3,165	9.31	1.29	67.03	0.027
≥60	3,793	17.16	2.40	122.70	0.005
Gender					
Male (ref)	5,241				
Female	2,020				
***Ethnic group**					
Malay (ref)	3,141	1.00			
Chinese	1,912	1.02	0.79	1.31	0.885
Indian	1,759	0.67	0.49	0.91	0.011
Others	449	0.97	0.59	1.58	0.897
Killip classification code					
I (ref)	3,906	1.00			
II	1,002	1.48	1.06	2.06	0.021
III	296	2.67	1.80	3.96	<0.001
IV	370	7.21	5.44	9.56	<0.001
Not stated/inadequately described	1,687	0.93	0.66	1.32	0.686
Percutaneous Coronary Intervention					
No (ref)	5,882				
Yes	1,379				
Cardiac catheterization					
No (ref)	5,115	1.00			
Yes	2,146	0.45	0.34	0.59	<0.001
TIMI risk score					
0-2 (ref)	4,249				
3-4	2,642				
5-7	370				
Smoking					
Never (ref)	3,297				
Former (quit >30 days)	1,874				
Current (any tobacco use within last 30 days)	1,789				
Unknown	301				

Factors	N	Hazard Ratio	95% CI		^p-value
Family history of premature cardiovascular disease					
No (ref)	4,924				
Yes	993				
Unknown	1,344				
Dyslipidaemia					
No (ref)	3,347				
Yes	3,340				
Unknown	574				
Hypertension					
No (ref)	1,703				
Yes	5,390				
Unknown	168				
Diabetes					
No (ref)	3,208	1.00			
Yes	3,787	1.55	1.18	2.02	0.002
Unknown	266	1.09	0.62	1.94	0.760
Heart failure					
No (ref)	6,104				
Yes	780				
Unknown	377				

* 'Others' includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner
^ using Cox regression with backward stepwise variable selection

Table 5.11.3 Prognostic factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2011-2013 (Multivariable analysis)

Factors	N	Hazard Ratio	95% CI		^p-value
Age group, years					
20 - <40 (ref)	655	1.00			
40 - <60	4,089	1.21	0.82	1.78	0.328
≥60	2,758	1.75	1.19	2.58	0.004
Gender					
Male (ref)	6,397	1.00			
Female	1,105	1.21	1.03	1.42	0.020
***Ethnic group**					
Malay (ref)	4,318	1.00			
Chinese	1,262	0.87	0.72	1.04	0.118
Indian	1,145	0.89	0.74	1.09	0.267
Others	777	0.61	0.44	0.85	0.004
Killip classification code					
I (ref)	4,135	1.00			
II	1,366	1.32	1.05	1.64	0.015
III	342	2.34	1.80	3.04	<0.001
IV	983	3.77	3.09	4.60	<0.001
Not stated/inadequately described	676	1.48	1.09	2.01	0.012
Percutaneous Coronary Intervention					
No (ref)	5,031	1.00			
Yes	2,471	0.73	0.58	0.92	0.008
Cardiac catheterization					
No (ref)	4,689	1.00			
Yes	2,813	0.84	0.67	1.04	0.111
TIMI risk score					
0-2 (ref)	2,241	1.00			
3-4	2,286	1.78	1.29	2.46	<0.001
5-7	2,322	3.20	2.34	4.38	<0.001
>7	653	6.16	4.36	8.70	<0.001
Fibrinolytic therapy					
Not given (ref)	1,875	1.00			
Given	5,627	0.78	0.67	0.90	0.001

Factors	N	Hazard Ratio	95% CI		ˆp-value
Smoking					
Never (ref)	2,241				
Former (quit >30 days)	1,283				
Current (any tobacco use within last 30 days)	3,825				
Unknown	153				
Family history of premature cardiovascular disease					
No (ref)	5,326	1.00			
Yes	957	1.00	0.77	1.30	0.997
Unknown	1,219	1.25	1.05	1.49	0.011
Dyslipidaemia					
No (ref)	4,133				
Yes	2,224				
Unknown	1,145				
Hypertension					
No (ref)	2,774	1.00			
Yes	4,259	1.39	1.16	1.67	<0.001
Unknown	469	0.70	0.46	1.09	0.112
Diabetes					
No (ref)	3,913	1.00			
Yes	3,016	1.28	1.09	1.51	0.003
Unknown	573	1.33	0.93	1.92	0.120
Heart failure					
No (ref)	6,803	1.00			
Yes	277	1.53	1.20	1.94	0.001
Unknown	422	0.99	0.75	1.31	0.969

* *'Others' includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner*
^ *using Cox regression with backward stepwise variable selection*

Table 5.11.4 Prognostic factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2011-2013 (Multivariable analysis)

Factors	N	Hazard ratio	95% CI		^p-value
Age group, years					
20 - <40 (ref)	303	1.00			
40 - <60	3,165	10.61	1.48	76.17	0.019
≥60	3,793	20.45	2.86	146.28	0.003
Gender					
Male (ref)	5,241				
Female	2,020				
*Ethnic group					
Malay (ref)	3,141	1.00			
Chinese	1,912	1.00	0.81	1.25	0.974
Indian	1,759	0.67	0.51	0.88	0.003
Others	449	0.94	0.58	1.54	0.818
Killip classification code					
I (ref)	3,906	1.00			
II	1,002	1.66	1.26	2.18	<0.001
III	296	2.80	1.95	4.03	<0.001
IV	370	7.73	5.97	10.01	<0.001
Not stated/inadequately described	1,687	1.02	0.76	1.36	0.896
Percutaneous Coronary Intervention					
No (ref)	5,882				
Yes	1,379				
Cardiac catheterisation					
No (ref)	5,115	1.00			
Yes	2,146	0.67	0.52	0.85	0.001
TIMI risk score					
0-2 (ref)	4,249				
3-4	2,642				
5-7	370				
Smoking					
Never (ref)	3,297	1.00			
Former (quit >30 days)	1,874	1.40	1.08	1.80	0.010
Current (any tobacco use within last 30 days)	1,789	1.18	0.90	1.54	0.230
Unknown	301	1.17	0.76	1.79	0.471

Factors	N	Hazard ratio	95% CI		^p-value
Family history of premature cardiovascular disease					
No (ref)	4,924				
Yes	993				
Unknown	1,344				
Dyslipidaemia					
No (ref)	3,347				
Yes	3,340				
Unknown	574				
Hypertension					
No (ref)	1,703				
Yes	5,390				
Unknown	168				
Diabetes					
No (ref)	3,208	1.00			
Yes	3,787	1.68	1.33	2.14	<0.001
Unknown	266	0.75	0.41	1.38	0.361
Heart failure					
No (ref)	6,104	1.00			
Yes	780	1.36	1.04	1.78	0.023
Unknown	377	1.01	0.66	1.53	0.981

* *'Others' includes Orang Asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner*
^ *using Cox regression with backward stepwise variable selection*

APPENDIX A: DATA MANAGEMENT

The National Cardiovascular Disease Database (NCVD) Registry maintains two different databases for cardiovascular diseases, i.e. for Acute Coronary Syndrome and Percutaneous Coronary Intervention. Data is stored in SQL Server due to the high volume of data accumulated throughout the years.

Data sources
Source Data Providers (SDPs) of NCVD-ACS Registry comprise of all major hospitals who have participated in the registry, throughout Malaysia.

Data Flow Process
This section describes the data management flow process of the National Cardiovascular Disease Database Registry.

Source Data Provider	←	Query
SDP Data reporting, Data correction & Submission tracking		
Edit checks run and Data cleaning	→	
Data cleaning (Data update and checking, Data standardisation, Data de-duplication, Mortality record matching)	→	
Data review and coding	→	
Final query resolution/Data cleaning (if any)	→	
Database lock		
Final analysis and report writing		
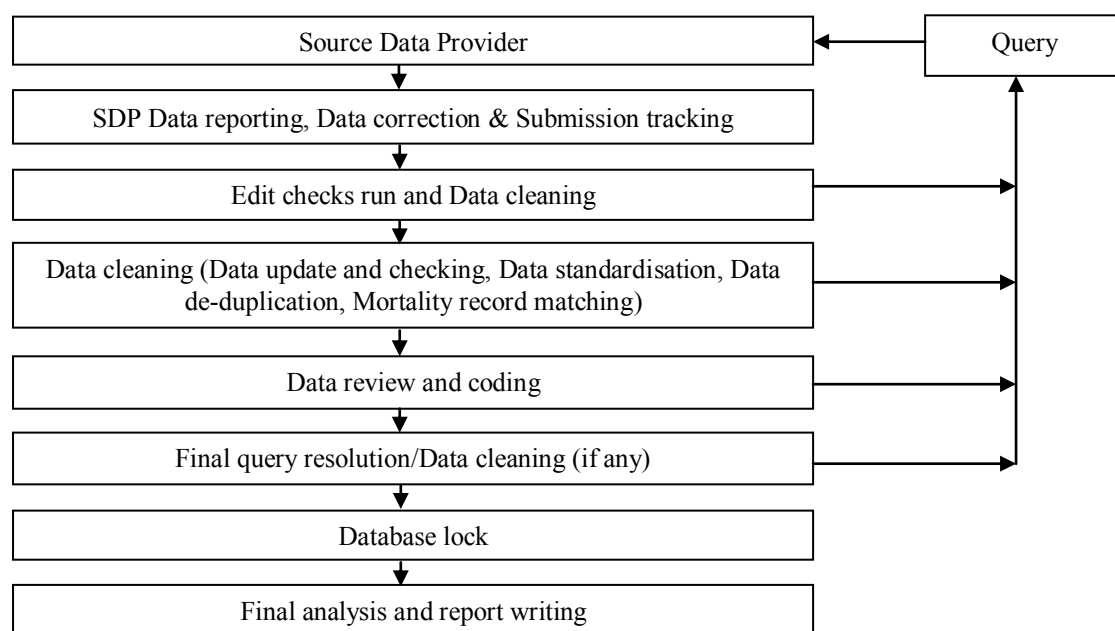
SDP Data reporting, Data Correction and Submission tracking

Data reporting by SDP is done via Web Applications e-Case Report Forms.

There are a number of data security features that are designed into the NCVD web application (eCRF) such as web owner authentication, 2-level user authentication (user name and password authentication and a Short Messaging System (SMS) of authorisation code of mobile phone authentication), access control, data encryption, session management to automatically log off the application, audit trail and data backup and disaster recovery plan.

For ACS, SDP submits NCVD-ACS Notification form on an ad-hoc basis whenever a patient was admitted for an ACS event. SDP also submits follow-up data at 30-days and 12-months post notification date intervals. An alert page containing all the overdue submissions for follow-up at 30-days and 12-months post notification date is available to users for ease of submissions tracking.

Prior to registering a patient record, a verification process is done by using the search functionality to search if the patient already exists in the registry. The application will still detect a duplicate record if the same MyKad number is keyed in, should the step of searching patient is not done. This step is done

to avoid duplicate records. For patients whose records already exist in the database, the SDP need only add a new ACS notification as the basic patient particulars are pre-filled, based on existing patient information in the database. The ACS and PCI registries share the same patient list.

There are a few in-built functionalities at the data entry page that serve to improve data quality. One such function is auto calculation function to reduce human error, in calculations. There is also an inconsistency check functionality that disables certain fields and prompts the user, if the value entered is out of range.

A real time data query page is also available via the web application to enable users to check which non-compulsory data is missing, out of range or inconsistent. A link is provided on the data query page for user to click on to resolve the query for the particular patient.

Real time reports are also provided in the web application. The aggregated data reports are presented in the form of tables and graphs. The aggregated data reports are typically presented in two forms, one as centre's own aggregated data report and another as the registry's overall aggregated data report. In this way, the centre can be compared with the overall registry's average.

Data download function is also available in the web application to allow users to download their own centre's data from all the forms entered, for their own further analyses. The data are downloadable as Text - tab delimited (.txt) format, Microsoft excel workbook (.xls) and as Comma separated value (.csv) format.

Edit checks run and Data cleaning

Edit checks are performed periodically by the registry manager to identify missing compulsory data, out of range values, inconsistency of data, invalid values and errors with de-duplication. Data cleaning is then performed based on the results of edit checks. Data update and data checking of the dataset is performed when there is a query of certain fields as and when necessary. It could be due to request by the user, correction of data based on checking via data query in eCRF or after receiving results for preliminary data analysis. During data standardisation, missing data are handled based on derivation from existing data. Data de-duplication is also performed to identify duplicate records in the database that might have been missed out by SDPs. Finally, record matching against the National Death Register *(Jabatan Pendaftaran Negara)* is performed to verify the mortality status of the patient.

Final query resolution / data cleaning / database lock

A final edit check run is performed to ensure that the data is clean. All queries will be resolved before the database is locked, to ensure data quality and integrity. The final dataset is subsequently locked and exported to the statistician for analysis.

Data analysis

Please refer to Statistical Analysis Method section for further details.

Data release policy

One of the primary objectives of the registry is to make data available to the cardiovascular healthcare providers, policy makers and researchers. The registry would appreciate if users acknowledge the registry for the use of the data. Any request for data that requires a computer run must be made in writing (by e-mail, fax, or registered mail) accompanied with a Data Release Application Form and signed Data Release Agreement Form. These requests need prior approval by the Advisory Board before data can be released.

Registry ICT Infrastructure and Data centre

The operation of the NCVD is supported by an extensive ICT infrastructure to ensure operational efficiency and effectiveness.

The NCVD subscribes to co-location service with a high availability and highly secured Internet Data Centre at Cyberjaya in order to provide NCVD with quality assured Internet Hosting services and state-of-the-art physical and logical security features without having to invest in costly data centre setup internally. Physical security features implemented includes state-of-the-art security features such as anti-static raised flooring, fire protection with smoke and heat alarm warning system, biometric security access, video camera surveillance system, uninterrupted power supply, environmental control, etc.

Other managed security services include patch management of the servers, antivirus signature monitoring and update, firewall traffic monitoring and intrusion detection, security incidence response, data backup service done on a daily, weekly and monthly basis, data recovery simulation to verify that the backup works, which is done at least once yearly, network security scan and penetration test done on a half-yearly basis, security policy maintenance, maintenance and monitoring of audit trail of user access, etc. Managed system services such as usage and performance report, operating system maintenance and monitoring, bandwidth monitoring and systems health monitoring are also provided.

APPENDIX B: STATISTICAL METHODS

The statistical analysis described below was conducted on data collected in the NCVD-ACS Registry from year 2011 to 2013. Inclusion criteria were:
- all patients who had ACS procedures performed between 2011 and 2013
- all patients who are aged 20 years and above

Patients with unknown or missing ACS stratum and with the final diagnosis of either stable angina or non-cardiac conditions were excluded from the analysis. In general, the unit of analysis was the number of patients with admission due to ACS.

Statistical methods for most chapters involved descriptive analysis. For discrete data, we calculated frequency and percentage; for continuous data, the mean, standard deviation (SD), median, minimum and maximum values were calculated. An exception to this was survival analyses, which were performed to evaluate the prognostic factors for in-hospital and 30-day mortality in Chapter 5.

For all variables, percentages were only calculated for categories listed in the CRFs.

Missing data were reported for both discrete and continuous data. No statistical imputation was applied to replace missing data. However, to avoid illogical ranges in the data, outliers were set to missing data based on acceptable range, as presented in a table below:

Fields	Acceptable range
Age	≥ 20 years old
Number of distinct episodes of angina	≤ 20 (0 = no episodes)
Heart rate	20 – 200 beats/min
Systolic BP	50 – 270 mmHg
Diastolic BP	10 – 170 mmHg
Height	130 cm – 250 cm
Weight	30 kg – 200 kg
Body Mass Index (BMI)	14.0 – 50.0 kgm^{-2}
Waist circumference	70 – 130 cm
Hip circumference	80 – 200 cm
LDL-C	0.5 - 20.0 mmol/L
HDL-C	0.5 - 5.0 mmol/L
Triglycerides (TG)	0.5 - 15.0 mmol/L
Fasting Blood Glucose	3.0 - 50.0 mmol/L
HbA1c	4.0 - 32.0%
Left Ventricular Ejection Fraction	5.0 - 90.0%
Door to needle time (mins)	1 - 1440 minutes (apply only for patients with STEMI and receiving thrombolysis at the centre)
Door to balloon time (mins)	1 - 1440 minutes (apply only for patients with STEMI and planned for primary PCI)
Days in CCU	≤ 30 days
Days in ICU	≤ 30 days

The data was analysed based on the focus of each report chapter as described below.

Patient Characteristics

Patient characteristics were summarised in Chapter 2. Number of patients in each year was determined based on their admission year due to ACS. The results presented the patients' age, gender, ethnicity, coronary risk factors, co-morbidities and other variables in the CRF.

Cardiac Presentation

Chapter 3 includes an analysis of the clinical presentations, baseline investigations, electrocardiography, clinical diagnosis at admission, fibrinolytic therapy and invasive therapeutic procedures. An analysis of STEMI time-to-treatment was performed in which we excluded any illogical values of time-to-treatment (such as negative values for pain-to-needle time and door-to-balloon time).

Treatment

Summary of treatment is presented in Chapter 4. The summary of treatment includes duration of hospitalisation days, admission days in CCU and ICU, types of treatment and pharmacological therapy given during admission.

Clinical Outcomes

The patient outcomes at discharge and 30-day follow-up are presented by their ACS stratum, by pre-morbid conditions and types of treatment. In order to evaluate the status of alive or deceased, individual patients were matched against the status provided by the Malaysian National Registration Department (NRD). Patients were considered as alive at the time of follow-up if the date of their death was not provided in the NRD dataset. Prognostic factors for in-hospital and 30-day mortality were also presented in Chapter 5.

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APPENDIX D : NOTE OF APPRECIATION

A heart-felt appreciation is extended to everyone who contributed to the successful publication of this report.

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SN SAFIDAH AMAN
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HOSPITAL TUANKU FAUZIAH
DR SIA KOON KET
DR NORAZRULRIZAL MAT NOR
DR SHERRY TANG
DR SURIA PRAKASH
SR RUSMIRA RAMLI
SN RAFIZAH MD LELA
SN ROSMAWATI MD ARIFFIN
SN ALMI AZURA MAT SABU
SN NUR SYAZIELA AZIZAN
SN ALIFF FITRI MUHAMMAD
SN FARAH IZZAH MAHBUB

HOSPITAL AMPANG
DR OON YEN YEE
SR MARIDAH MOHD HASHIM
SR TAN LIAN CHU
SN CHE NURHASMIZA CHE HASSAN
SN SITI NORZRUK RAMLI
SN SITI NORAISHAH SULAIMAN
SN PUNITHA JAYAKUMAR

HOSPITAL MELAKA
DR SHARIFAH OMAR
DR JULIAN TEY HOCK CHUAN
SR FARIDAH SHARIF
SN JUNAIDAH AHMAD
SN NUR MAWATI AWANG
SN ROZANNA JOHARI
SN JUHAIMA HANIFA
SN RIZAWATI ZOHARI
SN SUZIANA MOHD SHARIF

INSTITUT JANTUNG NEGARA
TAN SRI DATO' SERI DR ROBAAYAH ZAMBAHARI
DATO' DR ROSLI MOHD ALI
DATO' SRI DR HJ AZHARI ROSMAN
DATO' DR DAVID CHEW SOON PING
DATO' DR AMIN ARIFF NURUDDIN
DATO' DR K BALACHANDRAN
DATUK DR MOHD NASIR MUDA
DATUK DR RAZALI OMAR
DATUK DR AIZAI AZAN ABD RAHIM
DATUK DR SANJIV JOSHI
DATUK DR AHMAD KHAIRUDDIN MOHAMED YUSOF
DR AZLAN HUSSIN
DR SHAIFUL AZMI YAHAYA
DR EMILY TAN LAY KOON
DR SURINDER KAUR
DR AL FAZIR OMAR
DR MAHMOOD SABRUDDIN ZULKIFLI
DR SYAHIDAH SYED TAMIN
DR AZMEE MOHD GHAZI
DR SUHAIMI OSMAN
DR SHAMRUZ KHAN AKEREM SHAH
DR SHAHRUL ZURAIDI IDRIS
DR JAIDEEP SINGH SIDHU
DR LAU GIN CHOY
DR AKMAL HAKIM ARSHAD
DR YAP LOK BIN
DR RAED A.S ALKUTSAN
DR JAYAKHANTAN KOLANTHAI VELU
DR NANDAKUMAR RAMAKRISHNAN
DR KUMARA GURUPPARAN
DR AFRAH HAROON
DR RONY YULIWANSYAM
DR ZULKEFLEE MUHAMAD
DR KOH KOK WEI
DR BARVEEN AISHA ABU BAKER
DR NGUYEN THAI BINH SON
DR MOHAN RAMACHANDRAN
DR RAFIDAH ABU BAKAR
DR RUBENTHIRAN NAVARATNAM
DR TEE CHEE HIAN
DR TEOH CHEE KIANG
DR NAVIN SUKILAN
DR SHAROL ANUAR MOHD YASIN
DR ALAN KOAY CHOON CHERN
DR DHANAN UMADEVAN
DR NG YAU PIOW
DR HAFIDZ ABD HADI
DR ROWENA ONA
DR SHER BAHADAR KHAN

DR IKA FAIZURA MOHD NOR
DR BENI ISMAN RUSANI
DR YAP SWEE HIEN
INTAN SAFARINAZ SABIAN
SITI NURZALIANA MOHD SAFARI
HAZELIN MOHD HANAFIAH
MAIZATU AKMA SULONG

HOSPITAL TUANKU JA'AFAR
DATO' DR SREE RAMAN
DR LOOI YIK KIAN
DR MAHESWARAN A/L KALIMUTHU
DR CHONG HUI MIN
DR HONG HOOI CHUEN
SN SARASWATHI SUBRAMANIAM
SN HALIMAH MUSA

HOSPITAL SULTANAH NUR ZAHIRAH
DR MOHD SAPAWI MOHAMED
DR ZULKIFLI MUSTAPHA
DR AHMAD WAZI RAMLI
SR SUZILAWANI RAMLI
SN NUR AZMAWANI IBRAHIM
SN SUHAILY SULONG

HOSPITAL RAJA PERMAISURI BAINUN
DATO' DR K CHANDRAN
SR RATNAVATHY P KOVIL PILLAI
SN NOR HASNIZA ABDUL HALIM
SN NORIZAN HASHIM
SN NALINI GOVINDAN
SN INDRANI TAMILSALVAN
SN SURYIA HARUN
SN SUZANASUZILA MAT SAAD
SN NOOR AZIDA ARBA'AIN

HOSPITAL RAJA PEREMPUAN ZAINAB II
DR MANSOR YAHYA
DR AZERIN OTHMAN
SR NOOR ZAKIAH MAT HUSSAIN
SN WAN RUZITA WAN HASSAN
SN RAFIDAH MUSTAFA
SN FARIDAH ABDUL RAHMAN

HOSPITAL SERDANG
DR ABD KAHAR ABD GHAPAR
DR KAMARAJ SELVARAJ
DR GOH SHIAU FUI
DR FATEN AQILAH ARIS
MATRON SITI SALMOR TALIB
SR RUBIAH OMAR
SR NORAIDA RASIT

SR POZIAH HASSIM
SR ROSILAH ABD RAHIM
SN ASLIZA ARIFFIN
SN NURFADHLINA MIK SALMINA
SN MAHANI ISMAIL
SN NORMA MOHD ZIN
SN HAZIRAH MOHD SUKI
SN NOR AZEAN NYAH IBRAHIM
SN NORHAFIZA MUSA

HOSPITAL QUEEN ELIZABETH I
DR MICHAL CHRISTINA A/P STEVEN
DR PETER TOK SEAH KENG
SR FAUZILLAH PETITONG
SR EBBA GONDILOU
SN DAMICA KUNSIONG
SN JANIH BAGOL
SN ANDREA SARAH VINCENT
SN ROHANI LANTOP
SN AMIRA SUHADAH MD YUSOFF
SN MAHIRAH JUHILI
SN ARLINA MAJULIN
SN SARIMAH ANGAK
SN NOREINI SIMAN
SN DORA DISONI
SN SWINELZAH ERNAH LADIUN
SN CHIN CHIEU YEE
SN HERNIEZAH MOHD TAIP
SN MAINIE MOMILI
SN JESSICA ANAK ANTHONY
SN JAMILAH MOHD HUSSIN
SN NOORSYAHIZAYATI ABD KARIM
SN NORSHILA LAJIS
SN JUHANAH GIMBO
SN LEDY WONG
SN HASLIZA JAAFAR
SN PRECELLA JOSEPH
SN NORFAZILAH HAZZAH MUSLIMIN
SN NUR ASHYKIN MAJNUN
SN MARLINAH PETER MAGARIF
WAN HANAPI WAN ALI
ALVIN BUNDOI

HOSPITAL TENGKU AMPUAN RAHIMAH
DATIN PADUKA DR SANTHA KUMARI
DR CHOOR CHEE KEN
DR MOHAMAD NAZRULHISHAM MAD NASER
SR KHAIRUNNIZAM HARUN
SR HASMAH SALLEH
SN ROHAIZA ABD RAZAK
SN CHOONG TSU MEILI
SN MASLIZA MOHAMED LAZIM

SN SUHANA MOHD YUSOF
SN ROHAYA ZAKARIA
SN NORZARINA RAZALI
SN NORAZZREEN MAT NOR
SN ZURAYA ABDULLAH
SN ZAHRAH ZAINUDDIN
SN TERESA AK BILON
P WILSON A/L V PERIANAYAGAM
CHING BEE LIAN
NOR HAYATI ISMAIL

HOSPITAL QUEEN ELIZABETH II
DR LIEW HOUNG BANG
SR ANGELEN SHIRLEY GAING
SR FELIZIA ALLIUN
SR SITI RAHMAH IDRIS
SN LITTA JACOB
SN JUINIE MIJIN
SN ANGIE ANTHONY
SN SITI AINSAH RAZALI
SN FAKRI HAMZIE BIN MOHAMAD YUSOF
SN STELLA LEE
SN HASNAH OTHMAN
SN ELDAWATI MORIS
SN RUZILI PATRICIA TOTU
SN NANTHINI VIJAYKUMARAN
SN MARIAH SOFYANA MURSIN
SN JOYCE HIEW
SN NOR AFIDAH AZRA ISMAIL
SN ERICA EDWIN
SN RYNESSA RINU
SN BERNADETTE JOACHIM
SN JACK B UBIN
SN HYELIA R DARIUS
SN LICINA CHAI @ MD RIDZUAN
SN LEON IRWIN STEPHEN
SN DYANN VIVIAN JONIUS
SN LIZA DAUNI
SN PAMINI PILLAI
SN NORDIANA RUDIN
SN LYZAH ASMAT
SN ZAFIRAH ZAKARIA
SN LANNIE FELECITY NORMAN
MABELLE WONG FUI JIN
HAFIZAH JUMAT

TENGKU AMPUAN AFZAN HOSPITAL
DR ABDUL HADI JAAFAR
DR ANWAR IRAWAN RUHANI
DR NG KOK HUAN
DR HARRIS NGOW ABDULLAH
SR ZARINA ISMAIL

SN NOOR MARIAYANA MOHD ZAKI
SN BASARIAH HASSAN
SN NORAINI NOR ABIDIN
SN AMINAH SAFINA ISHAK
SN ZALENAWATI GHAZALI
SN AZURA MUSTAFA
SN NORAZLINA ABD HAMID
SN NORAZMAH MAT RANI
SN NORIRDAWATY SAMSUDIN
SN AZLINA ALI
SR HASNI IBRAHIM
SN AFZARINIE ISMAIL
SN INTAN YULIANA YUSOF
SN NORMAWATI KAMAL
SN ROSZANA ISMAIL
SN NUR AFFNIZALIZA SHADUN
SN ASILAH MOHD RAMLI
SN NORASIAH ARIFIN
SN AZURAA MOHD YUSOFF
SN ROHAMIZA ABD HAMID
SN ZURAIDAH HAMAT

HOSPITAL SULTANAH BAHIYAH
DR ABD SYUKUR ABDULLAH
DR BILLY CH'NG SENG KEAT
DR WAN FAIZAL WAN RAHIMI SHAH
SR NAPISAH SHAFIE
SN ZARINA ABDUL HAMID
SN KHODIJAH MAT ISA
SN YUSNIZA ISHAK
SN SURYATI MD DERUS
SN NOOR HAFIZA MOHAMAD
SN SHARMILA ISMAIL
SN RASHIDA OMAR
SN SARLINA SAMSUDIN
SN AZLINA AZIZ
SN ROSLIZA NAYAN
SN FARIZA ABDUL HAMID
SN NORHASMIDA MAHATHIR
SN AMNATUL NUR HANANI
MOHAMAD SN KHAIRUL FAAIZAL BT
CHE ROOS SN AHMAD SHUKRI B SAAD
SN LIM JU LEE
SN NORHAZITA ABD RAHAMAN
SN AYUNI MD ISA

HOSPITAL PULAU PINANG
DATO' DR OMAR ISMAIL
DR LIEW CHEE TAT
DR SAFARI ELLIS
DR GOH TECK HWA

DR LIM SEH KIN
DR MANSOR YAHYA
DR BARAKATH BADUSHA
DR MUHAMMAD ALI SHEIKH ABD KADER
DR SHAHUL HAMID AHMADSAH
DR CHAN KOK KHENG
DR NAJHAN MAZWAN
DR EVELYN CHAN KAM YEEN
DR SHAMA MOHAMED NOOHU
DR TEE CHEE HIEN
DR FAHMIDA ILYAS
DR BUSHRA ILYAS
DR SITI KHAIRANI ZAINAL ABIDIN
DR AMARDEEP SINGH
DR AINOL SHAHERA SAHAR
DR MA SOOT KENG
DR STANLEY LIM CHIN YU
DR LIM P.G
DR GOH CHONG AIK
DR ZAHARATUL NAJWA HAMID
DR TAN YEE FONG
DR T. SARAVANABAWA
SR MAHANI DIN
SR MASNI HARUN
SR TAN AHR ER
SR JAMELAH AHMAD
SR TAN SAW EAN
SN BALKHIS AHMAD
SN NATRAH OMAR
SN NATRAH ABD RADZAK
SN NUR HUDA CHE KALIB
SN AZIZAH YUSUF
SN NORMILAH YAHAYA
SN NURSYAMSINAR ABU BAKAR
SN MASYIDAWATI MOHD RODZI
SN CHONG HOOI JOO
SN NORHAFIZA ABDUL AZIZ
SN SURAIDAH RAMLI
SN NORAZAH ABDUL AZIZ
SN KOO KWAI CHUN
SN LIM KOOI HENG
SN NOR DALILA ROSLI
SN RAJA SHAHRUL BARIYAH RAJA ISMAIL
SN WAN MARLIANA WAN RAZAK
SN SAFARINA ZAINUDDIN @ AHMAD
SALAWATI SAEDIN
LIM HOOI CHENG

PUSAT JANTUNG HOSPITAL UMUM SARAWAK
YB SENATOR DATUK DR SIM KUI HIAN
DR ANG CHOON KIAT
DR ALAN FONG YEAN YIP

DR CHAN WEI LING
DR ONG TIONG KIAM
DR LIEW CHEE KOON
ASSOC PROF DR ANNUAR RAPAEE
DR LOH CHEK LOONG
DR NOR HANIM MOHD AMIN
DATO' DR YEW KUAN LEONG
SR NGU CHING HUONG
SN NAINI JUNAIDI
SN QUINSLYNN MOLLON
SN CENDERELLA NUAH
SN SENORIAWATI ZAKARIA
SN JABADAH @ JUBAIDAH UKI
SN TERESA HIMANG
SN WALI DIHIK
SN MASNI OSMAN
SN AINA SAPIEE
SN PAYA ANYI
SN DAISY NURAISYA ABDULLAH
SN MILA JANE AK PATRICK BAI
SN ISABELLA VINCENT UGAP
SN FRANCISCA LUA ANAK CHRISTOPHER WATT
SN MASULA ARFIMAH MOHAMAD
SN MARGARET KIU SIEW ING
SN JURIT ANAK SIHING
SN NURUL NA'IMAH NAWI

APPENDIX E: CASE REPORT FORM

NATIONAL CARDIOVASCULAR DISEASE DATABASE (NCVD) NOTIFICATION FORM

Instruction: Complete this form to notify all ACS admissions at your centre to National Cardiovascular Disease Registry. Where check boxes ▢ are provided, check (√) one or more boxes. Where radio buttons ⊙ are provided, check (√) one box only.

A. Reporting centre: _____

B. Date of Admission (dd/mm/yy): ▢▢▢▢▢▢

SECTION 1 : DEMOGRAPHICS

1. Patient Name :	**2. Local RN No (if applicable):**

3. Identification Card Number :
- *MyKad / MyKid:* ▢▢▢▢▢▢ - ▢▢ - ▢▢▢▢   *Old IC:* _____
- *Other ID document No:* _____   → *Specify type (eg.passport, armed force ID):* _____

4. Gender: ⊙ Male ⊙ Female

5a. Date of Birth: ▢▢ ▢▢ ▢▢ (d d m m y y)   **5b. Age on admission:** ____ Auto Calculated

6. Ethnic Group:
⊙ Malay ⊙ Orang Asli ⊙ Murut ⊙ Iban
⊙ Chinese ⊙ Kadazan ⊙ Bajau ⊙ Other M'sian, specify : ....
⊙ Indian ⊙ Melanau ⊙ Bidayuh ⊙ Foreigner, specify country of origin: ....

7. Contact Number *(1):* _____ *(2):* _____

SECTION 2 : STATUS BEFORE EVENT

1. Smoking Status: ⊙ Never ⊙ Former (quit >30 days) ⊙ Current (any tobacco use within last 30 days)

2. Status of Aspirin Use: ⊙ None ⊙ Used less than 7 days previously ⊙ Used more than or equal to 7 days previously

3. Premorbid or past medical history :

a) Dyslipidaemia	⊙ Yes	⊙ No	⊙ Not known	h) New onset angina (Less than 2 weeks)	⊙ Yes	⊙ No	⊙ Not known
b) Hypertension	⊙ Yes	⊙ No	⊙ Not known				
c) Diabetes	⊙ Yes	⊙ No	⊙ Not known	i) Heart failure	⊙ Yes	⊙ No	⊙ Not known
d) Family history of premature cardiovascular disease	⊙ Yes	⊙ No	⊙ Not known	j) Chronic lung disease	⊙ Yes	⊙ No	⊙ Not known
				k) Renal disease	⊙ Yes	⊙ No	⊙ Not known
e) Myocardial infarction history	⊙ Yes	⊙ No	⊙ Not known	l) Cerebrovascular disease	⊙ Yes	⊙ No	⊙ Not known
f) Documented CAD > 50% stenosis	⊙ Yes	⊙ No	⊙ Not known	m) Peripheral vascular disease	⊙ Yes	⊙ No	⊙ Not known
g) Chronic Angina (onset more than 2 weeks ago)	⊙ Yes	⊙ No	⊙ Not known	n) None of the above	▢		

SECTION 3 : ONSET

1a. Date of onset of ACS symptoms: ▢▢ ▢▢ ▢▢ (d d m m y y)   **1b. Time of onset of ACS symptoms:** ▢▢ ▢▢ (h h m m) (24hr) ▢ Not available

2a. Date Patient presented : ▢▢ ▢▢ ▢▢ (d d m m y y)   **2b. Time Patient presented :** ▢▢ ▢▢ (h h m m) (24hr) ▢ Not available

3. Was patient transferred from another centre? ⊙ Yes ⊙ No

SECTION 4 : CLINICAL PRESENTATION & EXAMINATION

1. Number of distinct episodes of angina in past 24 hours: ____ ▢ Not available

2. Heart rate at presentation: ____ (beats / min)

3. Blood pressure at presentation: **a. Systolic:** ____ (mmHg) **b. Diastolic:** ____ (mmHg)

4. Anthropometric :
- **a. Height:** ____ (cm) ▢ Not available   **BMI:** ____ Auto Calculated
- **b. Weight:** ____ (kg) ▢ Not available
- **c. Waist Circumference:** ____ (cm) ▢ Not available   **WHR:** ____ Auto Calculated
- **d. Hip Circumference:** ____ (cm) ▢ Not available

5. Kilip classification code : ⊙ I ⊙ II ⊙ III ⊙ IV ⊙ Not stated / inadequately described

SECTION 5 : ELECTROCARDIOGRAPHY (ECG)

1. ECG abnormalities type
(Check one or more boxes)
- ▢ ST-segment elevation ≥ 1mm (0.1 mV) in ≥ 2 contiguous limb leads
- ▢ ST-segment elevation ≥ 2mm (0.2 mV) in ≥ 2 contiguous frontal leads or chest leads
- ▢ ST-segment depression ≥ 0.5mm (0.05 mV) in ≥ 2 contiguous leads
- ▢ T-wave inversion ≥ 1mm (0.1 mV)
- ▢ Bundle branch block (BBB)
- ▢ Non-specific
- ▢ None
- ▢ Not stated / inadequately described

2. ECG abnormalities location :
(Check one or more boxes)
- ▢ Inferior leads: II, III, aVF
- ▢ Anterior leads: V1 to V4
- ▢ Lateral leads: I, aVL, V5 to V6
- ▢ True posterior: V1 V2
- ▢ Right ventricle: ST elevation in lead V4R
- ▢ None
- ▢ Not stated / inadequately described

a. Patient Name :		b. Local RN No (if applicable):	
c. Identification Card Number :			

SECTION 6 : BASELINE INVESTIGATIONS   (Values obtained within 48 hours from admission)

		Absolute values	Unit	Reference upper limits	Check (√) if not done
1. Peak CK-MB			Unit/L		○ Not done
2. Peak CK			Unit/L		○ Not done
3. Peak Troponin:	**a. T n T:**	○ +ve ○ -ve OR	ng/mL or mcg/L		○ Not done
	b. T n I:	○ +ve ○ -ve OR	ng/mL or mcg/L		○ Not done
4. Lipid profile (Fasting):	**a. Total cholesterol:**		mmol/L		○ Not done
	b. HDL-C:		mmol/L		○ Not done
	c. LDL-C:		mmol/L		○ Not done
	d. Triglycerides:		mmol/L		○ Not done
5. Fasting Blood Glucose:			mmol/L		○ Not done
6. Left Ventricular Ejection Fraction:			%		○ Not done

SECTION 7 : CLINICAL DIAGNOSIS AT ADMISSION

1. Acute coronary syndrome stratum:	○ STEMI	○ NSTEMI	○ UA
2a. TIMI risk score UAP / NSTEMI:	Auto Calculated	**2b. TIMI risk score STEMI:**	Auto Calculated

SECTION 8 : FIBRINOLYTIC THERAPY   (Following Section is applicable for STEMI only)

1. Fibrinolytic therapy status :	○ Given at this centre ⟶ *(Please proceed to 2, 3, 4 below)*
	○ Given at another centre prior to transfer here
	○ Not given-proceeded directly to primary angioplasty
	○ Not given-Missed thrombolysis
	○ Not given-patient refusal
	○ Not given- Contraindicated

Fill in (2), (3), (4) only if you check 'Given at this centre' in (1) above	**2. Fibrinolytic drug used:**	○ Streptokinase ○ Others (t-PA, r-PA, TNK t-PA)
	3. Intravenous fibrinolytic therapy :	a. Date: [d d m m y y] b. Time: [h h m m] (24hr)
	4. Door to needle time:	*(mins)* Auto Calculated - (time pt presented to time of intravenous fb ty)

SECTION 9 : INVASIVE THERAPEUTIC PROCEDURES

1. Did patient undergo cardiac catheterization on this admission at your centre?	○ No ○ No - Transferred to another centre ○ Yes

2. Did patient undergo percutaneous coronary intervention on this admission? *(If No or Not Applicable, Please skip 5, 6 & 7b below)*	○ Yes ○ No ○ Not applicable
	
	○ **a. For STEMI** ⟶ ○ Urgent ⟶ ○ Primary PCI / ○ Rescue PCI / ○ Facilitated PCI
	     ○ Elective ⟶ Routine hospital practice? ○ Yes ○ No
	
	○ **b. For NSTEMI / UA** ⟶ ○ Urgent
	     ○ Elective ⟶ Routine hospital practice? ○ Yes ○ No

3a. Number of diseased vessels:	○ 0 ○ 1 ○ 2 ○ 3
3b. Left Main Stem involvement:	○ Yes ○ No
4. Culprit artery:	○ LAD ○ LCx ○ RCA ○ LM ○ Bypass Graft
5. First balloon inflation: (for STEMI - Urgent PCI only)	a. Date: [d d m m y y] b. Time: [h h m m] (24hr)
6. Door to balloon time (mins): (for STEMI - Urgent PCI only)	Auto Calculated - (time pt presented to time of first angio balloon inflation)
7a(i). TIMI flow classification pre-PCI:	○ 0 ○ I ○ II ○ III
7a(ii). Intra-coronary Thrombus present?	○ Yes ○ No
7b. TIMI flow classification post-PCI:	○ 0 ○ I ○ II ○ III
8. PCI type:	○ Angioplasty ○ Stenting ⟶ a) ☐ Direct stenting / b) ☐ Pre-dilatation done / c) ☐ Stent type: 'Drug-eluting' / d) ☐ Stent type: 'Bare-metal'
9. Did patient undergo CABG on this admission?	○ Yes ⟶ **a. Date of CABG:** [d d m m y y] ○ No

a. Patient Name :		b. Local RN No (if applicable):	
c. Identification Card Number :			

SECTION 10 : PHARMACOLOGICAL THERAPY   *(used / given during admission)*

Group	Given pre admission		Given during admission		Given after discharge	
1. ASA	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
2. ADP antagonist	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
3. GP receptor inhibitor	◉ Yes	◉ No	◉ Yes	◉ No		
4. Unfrac Heparin	◉ Yes	◉ No	◉ Yes	◉ No		
5. LMWH	◉ Yes	◉ No	◉ Yes	◉ No		
6. Beta blocker	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
7. ACE Inhibitor	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
8. Angiotensin II receptor blocker	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
9. Statin	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
10. Other lipid lowering agent	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
11. Diuretics	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
12. Calcium antagonist	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
13. Oral Hypoglycaemic agent	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
14. Insulin	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No
15. Anti-arrhythmic agent	◉ Yes	◉ No	◉ Yes	◉ No	◉ Yes	◉ No

SECTION 11 : IN-HOSPITAL CLINICAL OUTCOMES

1. Number of overnight stays	a. CCU		days
	b. ICU / CICU:		days

2. Outcome:	◯ **Discharged**		
		a. Date :	(dd/mm/yy)
		b. Total number of overnight stays:	Auto Calculated
	◯ **Transferred to another centre**		
		a. Date :	(dd/mm/yy)
		b. Name of Centre :	
	◯ **Died**		
		a. Date :	(dd/mm/yy)
		b. Cause of Death :	◯ Cardiovascular ◯ Non Cardiovascular ◯ Other,specify : _____

3. Final diagnosis at discharge:	◯ Q wave MI
	◯ non-Q wave MI
	◯ Unstable angina
	◯ Stable angina
	◯ Non-cardiac

4. Bleeding Complication (TIMI Criteria):	◯ Major
	◯ Minor
	◯ None
	◯ Not stated / Inadequately described

NATIONAL CARDIOVASCULAR DISEASE DATABASE FOLLOW UP FORM AT 30 DAYS

For NCVD Use only:
ID: ☐ / ☐
Centre: ☐

Instruction: This form is to be completed at patient follow-up 30 days (+ 2 weeks) after admission.
Following may be performed by clinic visit or telephone interview.
Where check boxes ☐ are provided, check (√) one or more boxes. Where radio button ⊙ are provided, check (√) one box only.

A. Name of reporting centre:	
B. Patient Name :	Hj/Hjh/Dato'/Dr.

C. Identification Card Number :
- *MyKad / MyKid:* ☐☐☐☐☐☐ - ☐☐ - ☐☐☐☐   *Old IC:* ☐
- *Other ID document No:* ☐   *Specify type (eg.passport, armed force ID):* ☐

D. Date of Follow up Notification: ☐☐☐☐☐☐ (dd/mm/yy)

SECTION 1: OUTCOME

1. Outcome:

1. Alive ☐

2. Died ☐ →
- **a. Date of death:** ☐☐☐☐☐☐ (dd/mm/yy)
- **b. Cause of Death:** ⊙ Cardiovascular   ⊙ Non Cardiovascular   ⊙ Other, specify : _____

3. Transferred to another centre : ☐ →
- **a. Date of last follow-up:** ☐☐☐☐☐☐ (dd/mm/yy)
- **b. Name of Centre :** ☐

4. Lost to Follow up: ☐ →
- **a. Date of last follow-up:** ☐☐☐☐☐☐ (dd/mm/yy)

2. Cardiovascular readmission:

1. ACS ☐ →
- **a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)
- **b. ACS Stratum:** ⊙ STEMI   ⊙ NSTEMI   ⊙ UA

2. Heart failure ☐ →
- **a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)

3. Revascularization ☐ →
- **a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)
- **b. Type of Revascularization :**
  - ☐ 1. PCI → ⊙ Urgent   ⊙ Elective
  - ☐ 2. CABG → ⊙ Urgent   ⊙ Elective

4. Stroke ☐ →
- **a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)

SECTION 2: CLINICAL HISTORY AND EXAMINATION (OPTIONAL)

1. Angina Status: (CCS classification)	⊙ None	⊙ Class I	⊙ Class II	⊙ Class III	⊙ Class IV
2. Functional capacity: (NYHA classification)	⊙ None	⊙ NYHA I	⊙ NYHA II	⊙ NYHA III	⊙ NYHA IV

3. BP	**a. Systolic:**	mmHg	**b. Diastolic:**	mmHg
4. Anthropometric:	**a. Weight:**	kg	**b. Waist circumference:**	cm
	c. Hip circumference:	cm		

SECTION 3: INVESTIGATIONS (OPTIONAL)

1. Lipid profile:	Values	Unit
a. Total cholesterol:		mmol/L
b. HDL-C:		mmol/L
c. LDL-C:		mmol/L
d. Triglycerides:		mmol/L
2. Left Ventricular Ejection Fraction:		%

SECTION 4: MEDICATIONS (OPTIONAL)

Group	Given		Group	Given	
1. ASA	⊙ Yes	⊙ No	**9. Statin**	⊙ Yes	⊙ No
2. ADP antagonist	⊙ Yes	⊙ No	**10. Other lipid lowering agent**	⊙ Yes	⊙ No
3. GP receptor inhibitor	⊙ Yes	⊙ No	**11. Diuretics**	⊙ Yes	⊙ No
4. Warfarin	⊙ Yes	⊙ No	**12. Calcium antagonist**	⊙ Yes	⊙ No
5. LMWH	⊙ Yes	⊙ No	**13. Oral Hypoglycaemic agent**	⊙ Yes	⊙ No
6. Beta blocker	⊙ Yes	⊙ No	**14. Insulin**	⊙ Yes	⊙ No
7. ACE Inhibitor	⊙ Yes	⊙ No	**15. Anti-arrhythmic agent**	⊙ Yes	⊙ No
8. Angiotensin II receptor blocker	⊙ Yes	⊙ No			

SECTION 5: REHABILITATION AND COUNSELLING (OPTIONAL)

1. Was patient referred to cardiac rehabilitation?	⊙ Yes	⊙ No
2. Has patient stopped smoking?	⊙ Yes	⊙ No

NATIONAL CARDIOVASCULAR DISEASE DATABASE FOLLOW UP FORM AT 1 YEAR

For NCVD Use only:
ID: _____ / _____
Centre: _____

Instruction: This form is to be completed at patient follow-up 1 year ± 1 month after admission. Following may be performed by clinic visit or telephone interview.
Where check boxes ☐ are provided, check (√) one or more boxes. Where radio button ◉ are provided, check (√) one box only.

A. Name of reporting centre: _____

B. Patient Name : Hj/Hjh/Dato'/Dr. _____

C. Identification Card Number :
MyKad / MyKid: ☐☐☐☐☐☐ - ☐☐ - ☐☐☐☐   *Old IC:* _____
Other ID document No: _____   *Specify type (eg.passport, armed force ID):* _____

D. Date of Follow up Notification: ☐☐☐☐☐☐ (dd/mm/yy)

SECTION 1: OUTCOME

1. Outcome:

1. Alive	☐	
2. Died	☐ →	**a. Date of death:** ☐☐☐☐☐☐ (dd/mm/yy)
		b. Cause of Death: ◉ Cardiovascular ◉ Non Cardiovascular ◉ Other, specify : _____
3. Transferred to another centre :	☐ →	**a. Date of last follow-up:** ☐☐☐☐☐☐ (dd/mm/yy)
		b. Name of Centre : _____
4. Lost to Follow up:	☐ →	**a. Date of last follow-up:** ☐☐☐☐☐☐ (dd/mm/yy)

2. Cardiovascular readmission:

1. ACS	☐ →	**a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)
		b. ACS Stratum: ◉ STEMI ◉ NSTEMI ◉ UA
2. Heart failure	☐ →	**a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)
3. Revascularization	☐ →	**a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)
		b. Type of Revascularization :
		☐ 1. PCI → ◉ Urgent ◉ Elective
		☐ 2. CABG → ◉ Urgent ◉ Elective
4. Stroke	☐ →	**a. Date :** ☐☐☐☐☐☐ (dd/mm/yy)

SECTION 2: CLINICAL HISTORY AND EXAMINATION

1. Angina Status: (CCS classification)	◉ None	◉ Class I	◉ Class II	◉ Class III	◉ Class IV
2. Functional capacity: (NYHA classification)	◉ None	◉ NYHA I	◉ NYHA II	◉ NYHA III	◉ NYHA IV

3. BP a. Systolic: _____ mmHg   b. Diastolic: _____ mmHg
4. Anthropometric: a. Weight: _____ kg   b. Waist circumference: _____ cm
c. Hip circumference: _____ cm

SECTION 3: INVESTIGATIONS

1. Lipid profile:	Values	Unit
a. Total cholesterol:		mmol/L
b. HDL-C:		mmol/L
c. LDL-C:		mmol/L
d. Triglycerides:		mmol/L
2. Left Ventricular Ejection Fraction:		%

SECTION 4: MEDICATIONS

Group	Given		Group	Given	
1. ASA	◉ Yes	◉ No	9. Statin	◉ Yes	◉ No
2. ADP antagonist	◉ Yes	◉ No	10. Other lipid lowering agent	◉ Yes	◉ No
3. GP receptor inhibitor	◉ Yes	◉ No	11. Diuretics	◉ Yes	◉ No
4. Warfarin	◉ Yes	◉ No	12. Calcium antagonist	◉ Yes	◉ No
5. LMWH	◉ Yes	◉ No	13. Oral Hypoglycaemic agent	◉ Yes	◉ No
6. Beta blocker	◉ Yes	◉ No	14. Insulin	◉ Yes	◉ No
7. ACE Inhibitor	◉ Yes	◉ No	15. Anti-arrhythmic agent	◉ Yes	◉ No
8. Angiotensin II receptor blocker	◉ Yes	◉ No			

SECTION 5: REHABILITATION AND COUNSELLING

1. Was patient referred to cardiac rehabilitation?	◉ Yes	◉ No
2. Has patient stopped smoking?	◉ Yes	◉ No

Instruction: Complete this form to notify all ACS admissions at your centre to NCVD ACS Registry. Where check boxes ☐ are provided, please check (√) one or more boxes. Where radio buttons ◉ are provided, check (√) **only one** option.

A. Reporting Centre: _____

B. Date of Admission (dd/mm/yy): ☐☐☐☐☐☐

SECTION 1: DEMOGRAPHICS

1. Patient Name: *(as per MyKad / Other ID)*		**2. Hospital RN:**

3. Identification Card Number:

MyKad: ☐☐☐☐☐☐ - ☐☐ - ☐☐☐☐   Old IC No.: _____

Other ID Document No.: _____ → Specify type: *(eg. Passport, armed force ID)* _____

4. Gender: ◉ Male ◉ Female   **5. Nationality:** ◉ Malaysian ◉ Non Malaysian

6a. Date of birth: *(dd/mm/yy)* ☐☐☐☐☐☐ *(write DOB as 01/01/yy if age is known)*   **6b. Age on admission:** ☐☐ *(auto calculate)*

7. Ethnic Group:
◉ Malay ◉ Punjabi ◉ Melanau ◉ Bidayuh ◉ Foreigner, specify country of origin:
◉ Chinese ◉ Orang Asli ◉ Murut ◉ Iban
◉ Indian ◉ Kadazan Dusun ◉ Bajau ◉ Other Malaysian, specify:

8. Contact Number: *(1):*   *(2):*

SECTION 2 : STATUS BEFORE EVENT

1. Smoking status: ◉ Never ◉ Former (quit >30 days) ◉ Current (any tobacco use within last 30 days) ◉ Not Available

2. Status of Aspirin use: ◉ Never ◉ Used less than 7 days previously ◉ Used more than or equal to 7 days previously

3. Medical history:

a) Dyslipidaemia	◉ Yes	◉ No	◉ Not known	g) Chronic Angina (≥2 weeks)	◉ Yes	◉ No	◉ Not known
b) Hypertension	◉ Yes	◉ No	◉ Not known	h) New onset angina (<2 weeks)	◉ Yes	◉ No	◉ Not known
c) Diabetes	◉ Yes	◉ No	◉ Not known	i) History of heart failure	◉ Yes	◉ No	◉ Not known

↓ ☐ OHA ☐ Insulin ☐ Non pharmacology therapy/diet therapy

				j) Chronic lung disease	◉ Yes	◉ No	◉ Not known
d) Family history of premature cardiovascular disease *(1st degree relative with either MI or stroke; <55 y/o if Male & <65 y/o if Female)*	◉ Yes	◉ No	◉ Not known	k) Chronic renal disease *[>200 μmol(micromol) serum creatinine]*	◉ Yes	◉ No	◉ Not known
e) Myocardial Infarction History	◉ Yes	◉ No	◉ Not known	l) Cerebrovascular disease	◉ Yes	◉ No	◉ Not known
f) Documented CAD	◉ Yes	◉ No	◉ Not known	m) Peripheral vascular disease	◉ Yes	◉ No	◉ Not known

(presence of >50% stenosis on CTA, angiogram or ischaemia on functional Cardiac Imaging such as nuclear, MRI, echo). Positive treadmill test or high Calcium score alone are not sufficient.)

n) None of the above ☐

SECTION 3 : ONSET

1a. Date of onset of ACS symptoms: ☐☐☐☐☐☐ *(dd/mm/yy)*   **1b. Time of onset of ACS symptoms:** *(24 hr format)* ☐☐☐☐ *(hh:mm)* ☐ Not Available

2a. Date patient presented: ☐☐☐☐☐☐ *(dd/mm/yy)*   **2b. Time patient presented:** *(24 hr format)* ☐☐☐☐ *(hh:mm)* ☐ Not Available

3. Was patient transferred from another centre? ◉ Yes ◉ No

SECTION 4 : CLINICAL PRESENTATION & EXAMINATION

1. Number of distinct episodes of angina in past 24h: ☐ Not Available   **2. Heart rate at presentation:** ☐☐☐ beats / min

3. Blood pressure at presentation: a. Systolic: _____ mmHg   b. Diastolic: _____ mmHg

4. Anthropometric: *(if not measured, please tick as 'Not Available')*

a. Height:		(cm)	☐ Not Available	BMI:	*(auto calculate)*
b. Weight:		(cm)	☐ Not Available		
c. Waist Circumference:		(cm)	☐ Not Available	WHR:	*(auto calculate)*
d. Hip Circumference:		(cm)	☐ Not Available		

5. Killip classification:
◉ Killip I *(no clinical signs of heart failure)*
◉ Killip II *(rales or crackles in the lungs, an S_3, and elevated jugular venous pressure)*
◉ Killip III *(frank acute pulmonary oedema)*
◉ Killip IV *(cardiogenic shock or hypotension [measured as systolic blood pressure <90 mmHg], and evidence of peripheral vasoconstriction [oliguria, cyanosis or sweating])*
◉ Not Applicable/ Not Available

a. Patient Name:		b. Reporting Centre:	
c. Identification Card No.:		d. Hospital RN:	

SECTION 5: BASELINE INVESTIGATION *(values obtained within 48 hours from admission)*

		Absolute Value	Unit	Reference Upper Limit	Check (√) if not done
1. Peak CK-MB:			Unit/L		◉ Not done
2. Peak CK:			Unit/L		◉ Not done
3. Peak Troponin:	a. T n T:	◉ +ve ◉ -ve OR ☐	ng/mL or mcg/L		◉ Not done
	b. T n I:	◉ +ve ◉ -ve OR ☐	ng/mL or mcg/L		◉ Not done
4. Lipid Profile (Fasting):	a. Total Cholesterol:		mmol/L		◉ Not done
	b. HDL-C:		mmol/L		◉ Not done
	c. LDL-C:		mmol/L		◉ Not done
	d. Triglyceride:		mmol/L		◉ Not done
5. Fasting blood glucose:			mmol/L		◉ Not done
6. HbA1c			mmol/L		◉ Not done
7. Left Ventricular Ejection Fraction:			%		◉ Not done

SECTION 6: ELECTROCARDIOGRAPHY (ECG)

1. ECG abnormalities type: *(Check one or more boxes)*	☐ ST-segment elevation ≥ 1mm (0.1mV) in ≥ 2 contiguous limb leads ☐ Bundle branch block (BBB) ☐ ST-segment elevation ≥ 2mm (0.2mV) in ≥ 2 contiguous frontal leads or chest leads ☐ Non-specific ☐ ST-segment depression ≥ 0.5mm (0.05mV) in ≥ 2 contiguous leads ☐ None ☐ T-wave inversion ≥ 1mm (0.1mV) ☐ Not stated/ inadequately described
2. ECG abnormalities location: *(Check one or more boxes)*	☐ Inferior leads: II, III, aVF ☐ Right ventricle: ST elevation in lead V4R ☐ Anterior leads: V1 to V4 ☐ None ☐ Lateral leads: I, aVL,V5 to V6 ☐ Not stated/ inadequately described ☐ True posterior: V1, V2

SECTION 7: CLINICAL DIAGNOSIS AT ADMISSION

1. <u>Acute Coronary Syndrome stratum:</u>	◉ STEMI	◉ NSTEMI	◉ Unstable Angina (UA)
2a. TIMI Risk Score for NSTEMI/ UA:		*(auto calculate)*	**2b.TIMI Risk Score for STEMI:** *(auto calculate)*

SECTION 8: FIBRINOLYTIC THERAPY   *(Following Section is applicable for STEMI only)*

1. <u>Fibrinolytic therapy status:</u>	◉ Given at this centre ➔ *(Please proceed to number 2 and 3 below)* ◉ Given at another centre prior to transfer here ◉ Not given—proceeded directly to primary angioplasty ◉ Not given—missed thrombolysis ◉ Not given—patient refusal ◉ Not given—contraindicated

Fill in (2) and (3) only if you check 'Given at this centre' in no. (1) above	**2. Fibrinolytic drug used:**	◉ Streptokinase ◉ Others (t-PA, r–PA, TNK t-PA)	
	3. <u>Intravenous fibrinolytic therapy:</u>	**a. Date:** *(dd/mm/yy)* ☐☐ / ☐☐ / ☐☐	**b. Time:** *(in 24 hr format)* ☐☐ : ☐☐ *(hh:mm)*
	4. Door to Needle time:	*(minutes)* Auto calculated—(time patient presented to time of fibrinolytic therapy given)	

SECTION 9: INVASIVE THERAPEUTIC PROCEDURES

1. Did patient undergo cardiac catheterization on this admission at your centre?	◉ Yes ◉ No ◉ No-transferred to another centre

2. Did patient undergo Percutaneous Coronary intervention (PCI) on this admission?	◉ Yes ◉ No ◉ Not applicable
	 ◉ **a. For STEMI** ➔ ◉ Urgent ➔ ◉ Primary PCI ◉ Rescue PCI ◉ Facilitated PCI
	         ◉ Elective ➔ Routine hospital practice? ◉ Yes ◉ No
	 ◉ **b. For NSTEMI/UA** ➔ ◉ Urgent
	         ◉ Elective ➔ Routine hospital practice? ◉ Yes ◉ No

3. First balloon inflation (for STEMI-Urgent PCI only):	**a. Date:** *(dd/mm/yy)* ☐☐ / ☐☐ / ☐☐ **b. Time:** *(in 24 hr format)* ☐☐ : ☐☐ *(hh:mm)*
4. Door to balloon time (for STEMI-Urgent PCI only):	*(minutes)* Auto calculated-(time patient presented to time of first angio balloon inflation)
5. Did patient undergo CABG on this admission?	◉ Yes ◉ No ◉ Not applicable

SECTION 10: PHARMACOLOGICAL THERAPY

Group	Given during admission		Given at discharge	
1. ASA	◉ Yes	◉ No	◉ Yes	◉ No
2. Ticlopidine	◉ Yes	◉ No	◉ Yes	◉ No
3. Clopidogrel	◉ Yes	◉ No	◉ Yes	◉ No
4. Prasugrel	◉ Yes	◉ No	◉ Yes	◉ No
5. Ticagrelor	◉ Yes	◉ No	◉ Yes	◉ No
6. Other antiplatelet	◉ Yes	◉ No	◉ Yes	◉ No
7. GP receptor inhibitor	◉ Yes	◉ No		
8. Unfrac heparin	◉ Yes	◉ No		
9. LMWH	◉ Yes	◉ No		
10. Fondaparinux	◉ Yes	◉ No	◉ Yes	◉ No
11. Oral anticoagulant (eg. Warfarin)	◉ Yes	◉ No	◉ Yes	◉ No
12. Beta blocker	◉ Yes	◉ No	◉ Yes	◉ No
13. ACE inhibitor	◉ Yes	◉ No	◉ Yes	◉ No
14. Angiotensin II receptor blocker	◉ Yes	◉ No	◉ Yes	◉ No
15. Statin	◉ Yes	◉ No	◉ Yes	◉ No
16. Other lipid lowering agent	◉ Yes	◉ No	◉ Yes	◉ No
17. Diuretics	◉ Yes	◉ No	◉ Yes	◉ No
18. Calcium antagonist	◉ Yes	◉ No	◉ Yes	◉ No
19. Oral hypoglycaemic agent	◉ Yes	◉ No	◉ Yes	◉ No
20. Insulin	◉ Yes	◉ No	◉ Yes	◉ No
21. Anti-arrhythmic agent	◉ Yes	◉ No	◉ Yes	◉ No

SECTION 11 : IN HOSPITAL OUTCOME

1. Number of overnight stays:	a. CCU *(days)*:	
	b. ICU/CICU *(days)*:	

2. Outcome:

◉ Discharged ⟶ a) **Date:** *(dd/mm/yy)* ☐☐ / ☐☐ / ☐☐

◉ Transferred to another centre ⟶ a) **Date:** *(dd/mm/yy)* ☐☐ / ☐☐ / ☐☐

b) Name of centre: ☐

◉ Died ⟶ a) **Date:** *(dd/mm/yy)* ☐☐ / ☐☐ / ☐☐

b) Cause of death: ◉ Cardiac ◉ Non Cardiac

3. Total number of overnight stays: ☐ *(auto calculate)*

4. Final diagnosis at discharge:

◉ STEMI

◉ NSTEMI

◉ UA

◉ Non Cardiac / Non ACS

5. Bleeding Complication: *(TIMI citeria)*

◉ Major *(Any intracranial bleed or other bleeding ≥ 5g/dL Hb drop)*

◉ Minor *(Non-CNS bleeding with 3-5g/dL Hb drop)*

◉ Minimal *(Non-CNS bleeding, non-overt bleeding, < 3g/dL Hb drop)*

◉ None

◉ Not stated / Inadequately described

NATIONAL CARDIOVASCULAR DISEASE DATABASE (ACS REGISTRY) FOLLOW UP FORM

Instruction: This form is to be completed at patient follow-up at specified duration (30 days / 12 months) after admission. Following may be performed by telephone interview or clinic visit.

Where check boxes ☐ are provided, please check (√) one or more boxes. Where radio buttons ◉ are provided, check (√) **only one** option.

A. Reporting Centre:	
B. Patient Name:	

C. Identification Card Number:
MyKad: ☐☐☐☐☐☐ - ☐☐ - ☐☐☐☐   Old IC: ____
Other ID document No.: ____   Specify type: *(eg. Passport, armed force ID)* ____

D. Date of Follow Up: ☐☐☐☐☐☐ *(dd/mm/yy)*   **E. Type of Follow Up:** ◉ 30 days ◉ 12 months

SECTION 1: OUTCOME

1. Outcome
- ◉ Alive
- ◉ Died
  - ➤ **a. Date of death:** ☐☐☐☐☐☐ *(dd/mm/yy)*
  - **b. Cause of death:** ◉ Cardiac ◉ Non Cardiac
- ◉ Transferred to another centre
  - ➤ **a. Date :** ☐☐☐☐☐☐ *(dd/mm/yy)*
  - **b. Name of centre:**
- ◉ Lost to Follow Up
  - ➤ **a. Date :** ☐☐☐☐☐☐ *(dd/mm/yy)*

2. Cardiovascular Readmission:
- ☐ ACS
  - ➤ **a. Date:** ☐☐☐☐☐☐ *(dd/mm/yy)*
  - **b. ACS Stratum:** ◉ STEMI ◉ NSTEMI ◉ UA
- ☐ Heart Failure
  - ➤ **a. Date :** ☐☐☐☐☐☐ *(dd/mm/yy)*
- ☐ Revascularization
  - ➤ **a. Type:** ☐ PCI **Date:** *(dd/mm/yy)* ☐☐☐☐☐☐ ➤ ◉ Urgent ◉ Elective
  - ☐ CABG **Date:** *(dd/mm/yy)* ☐☐☐☐☐☐ ➤ ◉ Urgent ◉ Elective
- ☐ Stroke
  - ➤ **a. Date :** ☐☐☐☐☐☐ *(dd/mm/yy)*

SECTION 2: CLINICAL HISTORY AND EXAMINATION (OPTIONAL)

1. Angina status: *(CCS classification)*	◉ None	◉ CCS I	◉ CCS II	◉ CCS III ◉ CCS IV
2. Functional capacity: *(NYHA classification)*	◉ None	◉ NYHA I	◉ NYHA II	◉ NYHA III ◉ NYHA IV

3. Blood Pressure: a. Systolic: ___ mmHg   b. Diastolic: ___ mmHg

4. Anthropometric: a. Weight: ___ kg   b. Waist circumference: ___ cm   c. Hip circumference: ___ cm

SECTION 3: INVESTIGATIONS (OPTIMAL)

1. Lipid Profile: a. Total Cholesterol: ___ mmol/L   b. HDL-C: ___ mmol/L   c. LDL-C: ___ mmol/L   d. Triglycerides: ___ mmol/L

2. Left Ventricular Ejection Fraction: ___ %   **3. HbA1c** ___ mmol/L

SECTION 4: MEDICATION (OPTIONAL)

Group	Given		Group	Given	
1. ASA	◉ Yes	◉ No	**12. Beta Blocker**	◉ Yes	◉ No
2. Ticlopidine	◉ Yes	◉ No	**13. ACE inhibitor**	◉ Yes	◉ No
3. Clopidogrel	◉ Yes	◉ No	**14. Angiotensin II receptor blocker**	◉ Yes	◉ No
4. Prasugrel	◉ Yes	◉ No	**15. Statin**	◉ Yes	◉ No
5. Ticagrelor	◉ Yes	◉ No	**16. Other lipid lowering agent**	◉ Yes	◉ No
6. Other antiplatelet	◉ Yes	◉ No	**17. Diuretics**	◉ Yes	◉ No
7. GP receptor inhibitor	◉ Yes	◉ No	**18. Calcium antagonists**	◉ Yes	◉ No
8. Heparin	◉ Yes	◉ No	**19. Oral Hypoglycaemic Agent**	◉ Yes	◉ No
9. LMWH	◉ Yes	◉ No	**20. Insulin**	◉ Yes	◉ No
10. Fondaparinux	◉ Yes	◉ No	**21. Anti-arrhythmic agent**	◉ Yes	◉ No
11. Oral anticoagulant agent (eg. Warfarin)	◉ Yes	◉ No			

SECTION 5: REHABILITATION AND COUNSELLING (OPTIONAL)

1. Was patient referred to cardiac rehabilitation?	◉ Yes	◉ No	◉ Not Applicable
2. Has patient stopped smoking?	◉ Yes	◉ No	◉ Not Applicable

National Cardiovascular Disease Database
c/o National Heart Association of Malaysia
Heart House, Level 1, Medical Academies of Malaysia
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50400 Kuala Lumpur
MALAYSIA